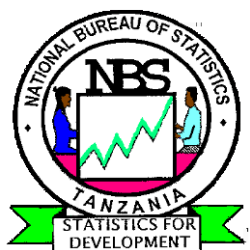




The United Republic of Tanzania

COMPENDIUM OF DISTRIBUTIVE TRADE AND SERVICES INDUSTRIES AND METEOROLOGICAL SERVICES CLASSIFICATIONS

TANZANIA MAINLAND



National Bureau of Statistics
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Preface

The Compendium of Distributive Trade and Service Industries and Meteorological Services is one of the sectorial compendium which has been produced for the purpose of documenting important statistical classifications, which are needed for data production and management of the said sectors in Tanzania Mainland. This is part of the main compendium of statistical classification whose production was coordinated by the National Bureau of Statistics (NBS) to improve the quality of data that is needed for planning, decision making and implementation processes of social, economic and environment management programs within the National Statistical System (NSS). Beside this compendium NBS has coordinated the production of other sectorial compendiums namely the Compendium of Agriculture Statistics Classification, Compendium of Tourism, Accommodation Facilities, Culture, Sports, Information and Communication Statistics Classification, Compendium of Health, Environment, Social Welfare, Community Development and Civil Registration Statistics Classification and the Compendium of Education Statistics Classification.

This compendium will be used as a reference document by various stakeholders including the government officials, academicians, researchers, policy makers, personnel of national and international agencies, and private sector operators.

The National Bureau of Statistics through the department of Statistical Method Standard and Coordination (SMSC) is recognizing the contribution of inputs used in the compilation of this compendium given by the stakeholders from the Ministry of Industry and Trade and the Tanzania Meteorological Agency.

It is therefore, expected that stakeholders will find this publication useful, and provide any necessary feedback to improve the contents for future publication of the same.

Dr. Albina Chuwa

Director General

Acronyms

BTN	Brussels Tariff Nomenclature
CD	Compact Disc
CPC	Central Product Classification
DoM	Directorate of Meteorology
DTS	Distributive Trade statistics
DVD	Digital Versatile Disc
EAC	East African Community
EAMD	East African Meteorological Department
GAW	Global Atmospheric Watch
GCOS	Global Climate Observing System
GDP	Gross Domestic Product
GDPFS	Global Data Processing and Forecasting System
GTS	Global Telecommunication System
HS	Harmonized System
ICAO	International Civil Aviation Organization
ISIC	International Standard Industrial Classification
NBS	National Bureau of Statistics
NMS	National Meteorological Services
NSS	National Statistical System
NSSF	National Social Security Fund
NWP	Numerical Weather Prediction
PPF	Parastatal Pension Fund
SADC	Southern Africa Development Community
SMSC	Statistical Methods, Standards and Co-ordination
TMA	Tanzania Meteorological Agency
TNADA	Tanzania National Data Archive
TSMP	Tanzania Statistical Master Plan
URT	United Republic of Tanzania
WCO	World Customs Organization
WMO	World Meteorological Organization

Chapter One

Introductory Background

1.1 Distributive Trade and Service Industries Statistics

Distributive Trade and Service industries (DTS) account for a substantial proportion of economic activities in every country, whether they are measured in terms of contributions to the GDP or share of total employment. DTS is an important economic activity comprising wholesale, retail, export and import i.e. sales without transformation of any types of goods together with services incidental to sales such as motor vehicle and motorcycle, repair, installation and delivery.

The last known comprehensive distributive trade survey was conducted by the then Central Bureau of Statistics in 1994. There is, therefore, no current detailed survey data and information available in regard to characteristics and contribution of this sector to the economy. Other sources of information like administrative records are not adequate since they are not very reliable and timely. The National Accounts therefore, uses administrative data on imports and exports to estimate the contribution of the distributive trade sector (i.e., wholesale and retail trade) to the Gross Domestic Product (GDP). It is also supplemented with data from the Tanzania Tourism Sector Surveys to estimate Value Added by the operation of hotels and restaurants.

1.2 Meteorological Service Statistics

The observation and collection of Tanzania meteorological data began along the coast at Chukwani, Zanzibar in 1850 by the former colonial Government of Germany. By 1929 meteorological services had become fully operational in Tanzania under the British Meteorological Services.

Meteorological Services in Tanzania were provided by the Directorate of Meteorology (DoM) that was established by Act of Parliament No. 6 of 1978 as a specialised department responsible for the provision of meteorological services to the nation following the collapse of East African Community in 1977.

Before then meteorological activities in Tanzania were organized within the framework of the East African Community (EAC) comprising Kenya, Uganda and Tanzania. The East African Meteorological Department (EAMD) was responsible for coordinating and implementing meteorological activities in East Africa.

The Directorate of Meteorology was transformed into an Executive Agency; the Tanzania Meteorological Agency was inaugurated on 3rd December 1999 from the Directorate of Meteorology into an Executive Agency through Executive Act No. 30 of 1997 with Government orders No. 405 of 26th November 1999. Tanzania Meteorological Agency is the designated National Meteorological Authority, which is entrusted with the task of providing weather and climate services in Tanzania.

TMA contributes to national social, economic, cultural and environmental goals by providing observational and meteorological services and by undertaking research into science and environment-related issues in support of its operations and services.



The functions of TMA according to Meteorology Act No. 6 of 1978 shall be as follows:-

- i. In relation to weather and climate matters, to implement the National Transport, Communications and Meteorology Policy;
- ii. To provide meteorological services for international air navigation on behalf of the United Republic of Tanzania as designated meteorological authority and according to Technical Regulations of the World Meteorological Organization Doc. ([C.31] 2.1.4) and Annex 3 (2.1.4) of the International Civil Aviation Organization.
- iii. To organize and administer efficient networks of surface and upper air stations necessary to capture accurate records of the weather and climatic conditions of the United Republic of Tanzania;
- iv. Observe, collect, archive and disseminate meteorological and related information for the United Republic of Tanzania;
- v. Exchange of the observational data at a national, regional and international level by using the Global Telecommunication System (GTS)

- vi. Take part in global exchange of meteorological and related data and products for the safety of humankind and to enhance the understanding of the global atmosphere;
- vii. To provide weather, climate services and warnings for the safety of life and property to the general public and to various users including aviation, agriculture and food security, water resources, disaster management, health and construction industry;
- viii. Carry out research and training in meteorology and climatology and in other related fields, and cooperate with other institutions where appropriate, for use in socio-economic development planning;
- ix. Participate in the activities of international organizations and programs, in particular the WMO e.g. World Weather Watch (WWW), International Civil Aviation Organization (ICAO), Global Climate Observing System (GCOS), the Global Atmospheric Watch (GAW), etc.
- x. Cooperate with other institutions concerned with the issues related to climate variability, climate change and environment;
- xi. Participate in activities dealing with meteorology under Regional Organizations e.g. Southern African Development Community (SADC) and East African Community (EAC);
- xii. Publish weather and climatological summaries, bulletins and other interpreted products;
- xiii. Collect fees and charges for data, products and services rendered; and to
- xiv. Carry out any other function as the Minister may direct.

Today observed meteorological parameters are Rainfall (Maximum, Minimum), Dry bulb, Dew Point, Wet bulb temperatures, Cistern Level Pressure, Relative Humidity, Vapor Pressure, Cloud Cover, Radiation, Sunshine hours, Wind run, Wind Speed, Wind Direction, Fog, Thunder, Hail, Mean Sea Level, Visibility and Evaporation. Meteorological services offered in the country

include provision of daily weather forecasts, advisories and warnings, ten day, monthly and seasonal outlooks and climate change projections.

This document comprises of four chapters, Chapter One is the Background Information, Chapter Two is the Distributive Trade and Service Industries Statistics, Chapter Three is the Meteorological Services Statistics and the Fourth Chapter is Concepts and Definitions. The classifications and codes used in this compendium are internationally recognized. These include the International Standard Industrial Classification (ISIC Rev 4), Central Product Classification (CPC), Tanzania Standard Classification of Occupations (TASCO) and World Meteorological Organization (WMO).

1.3 Database Coding System (ISIC Rev 4, CPC, TASCO)

1.3.1 International Standard Industrial Classification (ISIC) Rev.4

Classifications of economic activities are primarily used to compile statistical data on production, the production process (intermediary consumption, value added), factors of production, capital formation, financial transactions, etc. There is virtually only the one reference classification for economic activities namely, the International Standard Industrial Classification of all economic activities - ISIC Rev.4.

ISIC is the international reference classification of a coherent and consistent structure of economic activities based on a set of internationally agreed concepts, definitions, principles and classification rules.

In Tanzania, the National Statistical System has adapted ISIC Rev.4 to develop a national coding system. In view of the above, the first two digits stand for Division Code, third digit stands for Group Code, fourth digit stands for Class Code and fifth digit stands for Tanzania as a country's specific sub-class code. Distributive Trade and Service Industries Statistics have been described by ISIC Rev.4 into section G, Division 45 (All activities related to sale and repair of motor vehicle and motorcycle, Division 46 (Wholesale) and Division 47 (Retail trade). Also Section S describes Other Service Activities including the Distributive Trade and Services industries in Division 95 and 96 and Section L describes real estate activities in Division 68. The Meteorological Services (weather forecasting activities) appears in ISIC as one of the economic activity in Section M, Division 74, group 749 and class 7490.

1.3.2 Central Product Classification (CPC)

The name "Central Product Classification" is intended to indicate that the purpose of CPC is to provide a framework for international comparison of various kinds of statistics dealing with goods, services and assets. Basically, CPC is intended to be used for different types of statistics, for example, industrial statistics and national accounts, price statistics, foreign trade statistics (including trade in services) and balance-of-payments statistics.

Another main characteristic of CPC is that it contains a description of services. No international classification of services covering the whole spectrum of outputs of heterogeneous service industries and serving the different analytical needs of the various types of statistics has been available until now. Rapid technological progress in many service industries has led to new services and service packages being offered, such as financial services, computer services, consultancy and advisory services in many fields, technical services and other business services. For data collection and compilation on such outputs, it is essential to attempt to describe these services as accurately as possible to clarify the basic underlying concepts. Meteorological services are described in Section 8, Division 83 Groups 834 Class 8341 and specifically in Sub-class 83430.

1.3.3 Tanzania Standard Classification of Occupations (TASCO)

Tanzania Standard Classification of Occupations (TASCO) provides a systematic classification and codification structure for the civilian working population of the United Republic of Tanzania. TASCO has been fashioned after the International Standard Classification of Occupations, ISCO – 2008, compiled by the International Labour Office, ILO Geneva, and which is the revised edition of ISCO –88. This adaptation has been done to ensure international and regional comparability of reporting and analyzing of statistical data relating to occupations, manpower, population census, 6 etc, and also taking into account globalization. Continuity with ISCO-88 has been maintained, as far as possible, since the collection, analysis and reporting of statistical data in the United Republic of Tanzania has hitherto been based on ISCO-88 and TASCO- 1990 version. In all, 131 minor groups of TASCO and 444 Unit Groups are equivalent to, or only marginally different from those of ISCO-88. Nevertheless, TASCO, as well as ISCO-2008 differs slightly from the ISCO-88 in the following aspects:-

- i) A new level of aggregation, called Sub-Major Groups, which was introduced in ISCO-88 and adopted by TASCO -1990, has been maintained.
- ii) The basis of occupational classifications, in the ISCO-68, was according to type of work performed. TASCO-1990 and ISCO-88 occupational classification requirement”

criterion, reflected in the occupations. TASCO 2010 edition has observed the same principle.

iii) As a result of introduction of a new level of aggregation, viz Sub-Major Groups, the occupational code structure consists of six (6) digits. The digit structure is the same as was in 1990, thus:-

- a) Major Groups are of one (1) digit, the extreme left numeral, at 'thousand' point of the four digits before the decimal point;
- b) Sub-Major Groups consist of two (2) digits, the left two numerals, at 'thousand' and 'hundred' points, of the four-digit numbers before the decimal point;
- c) Minor Groups consist of three (3) digits, the left three numerals, at 'thousand' 'hundred' and 'ten' points, of the four-digit numbers before the decimal point;
- d) Unit Groups consist of four (4) digits, all the four numerals left of the decimal point; and
- e) Occupational Categories consist of six (6) digits, all the four (4) numerals left of the decimal point plus the two (2) numerals right of the decimal point.

Example

2143.40 Instrument Engineer, Electrical:

Major Group is indicated by '2', one digit at the thousand' point;

Sub-Major Group is indicated by '21', two digits at 'thousand' and 'hundred' points;

Minor Group is indicated by '214', at 'thousand', 'hundred' and 'ten' points;

Unit Group is indicated by '2143', all the four numerals left of the decimal point; and

Occupational category is indicated by 2143.40, i.e. all the four numerals, viz '2143' left of the decimal point plus two numerals, viz.40 on the right side of the decimal point.

Distributive Trade and Service industries workers in Tanzania are described as Unit Groups as described under (d) above. The workers in this category found in Major Group 1; Sub-Major Group 14; Minor Group 141- 143. For example the retail and wholesale trade Managers are coded as 1420. Also Major Group 8; Sub- Major Group 81; Minor Group 811-815.

Workers in Meteorological services are described in Major Group 2 and Sub-Major Group 21. In TASCO Meteorologists are coded as 2112.

Chapter Two

Distributive Trade and Service Industries Statistics

2 Introduction

Distributive Trade statistics (DTS) constitute a subject area of economic statistics concerned with provision of data on economic units whose main activity is wholesaling and retailing (that is to say, sale without transformation) of any types of goods together with performing services incidental to sales such as motor vehicle and motorcycle, repair, installation and delivery.

Wholesalers and retailers are in the common businesses of re-selling goods that have been purchased from formal and informal suppliers. They bring the goods produced in the districts, regions, or imported from other countries, to the market places where they can be purchased by consumers. *Wholesalers* can be thought of as “middle men” who supply goods to industrial or business customers, such as retailers, restaurants, manufacturers, or construction companies. The main characteristic of *retailers* is that they sell goods primarily to consumers or households.

The wholesale and retail trade industry has experienced many changes in recent years in Tanzania. These have been driven by political, economic, social, technological and market developments. The distributive trade policies have changed from price controlled and closed to free competitive market economy with an increasing role of private sector. Retailing has always been characterized by a mix of small, privately owned, informal and formal operated establishments, and new chain stores that have multiple outlets.

For wholesalers and retailers, the value of production is not the same as total sales. Selling prices include the cost of goods sold plus a profit *margin*, which is a measure of the value of the services provided by a wholesale or retail establishment. Margins cover expenses such as operating storage or retailing facilities, fuel and trucking services, supplies, rents and wages as well as a return to the owner. In some cases, the margin represents a relatively small percentage of the final selling price. Given the customer-oriented nature of the private sector retailing activities, it is not surprising that retail trade is a much bigger employer and labour-intensive activity than the wholesale trade sub-sector. Wholesale distribution centres are often located in highly populated areas, although smaller wholesale establishments can be found in most urban and rural areas. Retailing activity occurs in

every part of the villages, wards and districts. The regional distribution of workers in this industry closely mirrors the regional distribution of the workforce.

2.1 Contribution of Distributive Trade and Services Industries to Gross Domestic Product (GDP)

Distributive trade and service industries account for a substantial proportion of economic activities in every country, whether they are measured in terms of contributions to the GDP or share of total employment. On the average, the contribution of the distributive trade to total GDP was 10.4 percent for the period 2010 to 2014 (URT, Economic Surveys 2014).

2.2 Scope and Coverage of Distributive Trade and Services Industries

The following activities are defined in the International Standard Industrial Classification (ISIC) as falling within the scope of distributive trade and services: wholesale trade; retail trade; restaurants, cafes, and other eating and drinking places; hotels, camps and other lodging places; real estate; data processing services; advertising services; machinery and equipment retail and leasing; motion picture production; radio and television broadcasting; theatrical producers and other entertainment services; repair of footwear and other leather shoes; electrical repair shops; repair of motor vehicle and motorcycles; watch, clock and jewelry repair; other repair shops not classified elsewhere; laundries, laundry services, cleaning and dyeing plants, barber and beauty shops; photographic studios, including commercial photography.

2.3 Main Uses of Distributive Trade and Services Industries Statistics

The distributive trade and services industries statistics are required for several purposes. These include:

- i. The study of trends in the economy of wages and salaries earned in the sub-sector, including changes in stocks, gross fixed capital formation and sales to final consumers;
- ii. The construction of indices of wholesale and retail trades which are important indicators of business activities;
- iii. Use by the administrators of value-added tax; and
- iv. Use in trade, industry and market research, surveys and trend analysis and planning at the corporate level.

2.4 Frequency of Collecting Data of Distributive Trade and Services Industries

The Distributive Trade Survey is done after every five year but due to lack of funds, sometimes the survey is not conducted as planned. The first survey was done in 1994 and the second survey was conducted in 2010. However administrative records such as imports and exports are collected on monthly basis.

2.5 Challenges Facing Distributive Trade and Services Industries

Information on distributive trade and Services Industries is collected through surveys, census and on daily bases through tax records, balance sheets and other administrative records. Collected information through surveys and census involves instruments such as small questionnaires (small establishments) and large questionnaires (large establishments), the administration of small and large questionnaires involves direct interview with the respondent, but for large questionnaire some times the questionnaire is left to the respondent to be completed. Due to this approaches of obtaining information the sector is facing the following challenges:

- i. Delay/low response in obtaining the information
- ii. Respondents may not giving correct information
- iii. Problem of call-backs
- iv. Partial completion of questionnaires
- v. Some establishments do not keep records
- vi. Fear of taxation
- vii. By the very nature of the sectors in developing countries including Tanzania, there is a large number of micro, unorganized/informal sector activities taking place. Such activities are not usually captured in censuses and surveys, for example:

A: Most of micro kiosks or groceries with no regular paid employees;

B: Machingas, side walk vendors, ambulant peddlers, hawkers; and

C: Non-store retail selling like selling by vending machines; online buy and sell; house to house selling of goods.

2.6 Sources and Methods of Producing Distributive Trade and Services Industries

There are primary and secondary sources of data on Distributive Trade and Services Industries.

2.6.1 Primary Sources

Primary sources of data are surveys, censuses and inquiries designed to collect data on the sub-sector.

2.6.2 Secondary Sources

In the secondary sources, Information is collected on daily bases through tax records, balance sheets and other administrative records. These administrative records may be useful to researchers and other analysts whose studies focus on few establishments and on limited aspects of their activities. They do not generate data that can be relied upon as inputs into an operational database on distributive trade and service industries.

2.7 Data Dissemination and Archives

Compiled statistics are disseminated to different stakeholders in hard copies and soft copies through publications, Statistical Bulletins and NBS website (www.nbs.go.tz).

Storage/archives include; Web based database, mainly the Tanzania National Data Archive (TNADA) and published Statistical reports.

2.8 Database Coding System

Under this sub section details on ISIC Rev.4 and TASCO are explained.

International Standard Industrial Classification of all economic activities (ISIC Rev 4)

Division	Group	Class	Subclass	Description
45				Wholesale and retail trade and repair of motor vehicles, motorcycles and bicycles.
	451			Sale of motor vehicles
		4510		Sale of motor vehicles
				This class includes: Wholesale and retail sale of new and used vehicles: passenger motor vehicles, including specialized passenger motor vehicles such as ambulances and minibuses, etc., lorries, trailers and semi-trailers, camping vehicles such as caravans and motor homes, wholesale and retail sale of off-road motor

vehicles (jeeps, etc.), wholesale and retail sale by commission agents and car auctions

This class excludes wholesale and retail sale of parts and accessories for motor vehicles, renting of motor vehicles with driver, renting of trucks with driver, renting of motor vehicles and trucks without driver

452 Maintenance and repair of motor vehicles

4520 Maintenance and repair of motor vehicles:

This class includes:

Maintenance and repair of motor vehicles, tyre and tube repair, fitting or replacement, anti-rust treatment; and installation of parts and accessories not as part of the manufacturing process

This class excludes retreading and rebuilding of tyres

453 Sale of motor vehicle parts and accessories

4530 Sale of motor vehicle parts and accessories

This includes wholesale and retail sale of all kinds of parts, components, supplies, tools and accessories for motor vehicles

This class excludes retail sale of automotive fuel

454 Sale, maintenance and repair of motorcycles and related parts and accessories

4540 Sale, maintenance and repair of motorcycles and related parts and accessories

This class excludes wholesale of bicycles and related parts and accessories, retail sale of bicycles and related parts and accessories, renting of motorcycles, repair and maintenance of bicycles

45401 Wholesale and retail sale of motorcycles related parts and accessories

45402 Maintenance and repair of motorcycles

46 Wholesale trade, except of motor vehicles and motorcycles.

461 Wholesale on a fee or contract basis

4610 Wholesale on a fee or contract basis

		This class excludes wholesale trade in own name, activities of commission agents for motor vehicles, auctions of motor vehicles, retail sale by non-store commission agents, activities of insurance agents, activities of real estate agents
	46101	Activities of commission agents and all other wholesalers who trade on behalf and on the account of others
	46102	Activities of those involved in bringing sellers and buyers together or undertaking commercial transactions on behalf of a principal
	46103	Activities of wholesale auctioneering houses
462		Wholesale of agricultural raw materials and live animals
	4620	Wholesale of agricultural raw materials and live animals This class includes the wholesale of oleaginous fruits, flowers and plants, unmanufactured tobacco, live animals, hides and skins, leather, agricultural material, waste, residues and by-products used for animal feed. This class excludes wholesale of textile fibres
463		Wholesale of food, beverages and tobacco
	4630	Wholesale of food, beverages and tobacco This class excludes blending of wine or distilled spirits
	46301	Wholesale of food This includes; Wholesale of fruit and vegetables, Wholesale of dairy products, eggs and egg products; Wholesale of edible oils and fats of animal or vegetable origin; Wholesale of meat, meat products and fishery products; Wholesale of sugar, chocolate, sugar confectionery and bakery products; This sub-class also includes; feed for pet animals
	46302	Wholesale of beverages and tobacco products This sub-class also includes: Buying of wine in bulk and bottling without transformation and wholesale of coffee, tea, cocoa and spices,
464		Wholesale of household goods

4641	Wholesale of textiles, clothing and footwear
46411	Wholesale of textile and clothing This sub-class includes Wholesale of yarn and fabrics Wholesale of household linen etc. Wholesale of haberdashery: needles, sewing thread etc. Wholesale of clothing accessories such as gloves, ties, braces and fur articles and Wholesale of umbrellas, rain coats
46412	Wholesale of footwear This sub-class includes wholesale of rain boots This class excludes: Wholesale of jewellery and leather goods Wholesale of textile fibres
4649	Wholesale of other household goods This class includes: Wholesale of household furniture, lighting equipment and appliances; Wholesale of recorded audio and video tapes, CDs, DVDs and consumer electronics such as radio and TV equipment, CD and DVD players, recorders stereo equipment, video game consoles as well as musical instruments, games and toys, sports goods; Wholesale of cutlery, china, glassware, woodenware, wickerwork and cookware etc.; Wholesale of pharmaceutical, medical goods, perfumeries, cosmetics and soaps; Wholesale of bicycles and their parts and accessories; Wholesale of stationery, books, magazines and newspapers; Wholesale of photographic and optical goods (e.g. sunglasses, binoculars, magnifying glasses); Wholesale of leather goods and travel accessories; and wholesale of watches, clocks and jewellery

		This class excludes wholesale of blank audio and video tapes, CDs, DVDs, wholesale of radio and TV broadcasting equipment, wholesale of office furniture
465		Wholesale of machinery, equipment and supplies
	4651	Wholesale of computers, computer peripheral equipment and software
		This class includes wholesale of computers and computer peripheral equipment, wholesale of software
		This class excludes wholesale of electronic parts, wholesale of office machinery and equipment, (except computers and peripheral equipment), wholesale of computer-controlled machinery
	4652	Wholesale of electronic and telecommunications equipment and parts
		This class includes wholesale of electronic valves and tubes, wholesale of semiconductor devices, wholesale of microchips and integrated circuits, wholesale of printed circuits, wholesale of blank audio and video tapes and diskettes, magnetic and optical disks (CDs, DVDs), wholesale of telephone and communications equipment
		This class excludes wholesale of recorded audio and video tapes, CDs, DVDs, wholesale of consumer electronics, wholesale of computers and computer peripheral equipment
	4653	Wholesale of agricultural machinery, equipment and supplies
		This class includes wholesale of agricultural machinery and equipment such as ploughs, manure spreaders, seeders, harvesters, threshers, milking machines, poultry-keeping machines, bee-keeping machines, tractors used in agriculture and forestry
		This class also includes lawn mowers however operated
	4659	Wholesale of other machinery and equipment
		This class includes:
		Wholesale of office machinery and equipment, and office furniture except computers and computer peripheral equipment;

		Wholesale of transport equipment except motor vehicles, motorcycles and bicycles;
		Wholesale of production-line robots;
		Wholesale of wires and switches and other installation equipment for industrial use;
		Wholesale of other electrical material such as electrical motors, transformers;
		Wholesale of machine tools of any type and for any material;
		Wholesale of other machinery n.e.c. for use in industry, trade and navigation and other services; and wholesale of measuring instruments and equipment
		This class excludes:
		Wholesale of motor vehicles, trailers and caravans, see 4510
		Wholesale of motor vehicle parts, see 4530
		Wholesale of motorcycles, see 4540
		Wholesale of bicycles, see 4649
		Wholesale of computers and peripheral equipment, see 4651
		Wholesale of electronic parts and telephone and communications equipment, see 4652
466		Other specialized wholesale
	4661	Wholesale of solid, liquid and gaseous fuels and related products
		This class includes wholesale of fuels, greases, lubricants and oils
	4662	Wholesale of metals and metal ores
		This class includes:
		Wholesale of ferrous and non-ferrous metal ores;
		Wholesale of ferrous and non-ferrous metals in primary forms;
		Wholesale of ferrous and non-ferrous semi-finished metal products n.e.c.;
		Wholesale of gold and other precious metals
		This class excludes:
		Wholesale of metal scrap, see 4669

4663	<p>Wholesale of construction materials, hardware, plumbing and heating and supplies equipment</p> <p>This class includes:</p> <p>Wholesale of wood in the rough and products of primary processing of wood;</p> <p>Wholesale of paint, varnish, wallpaper and floor coverings;</p> <p>Wholesale of construction materials' e.g sand, gravel;</p> <p>Wholesale of flat glass;</p> <p>Wholesale of hardware, locks, fittings and fixtures</p> <p>Wholesale of hot water heaters, sanitary equipment baths, washbasins, toilets and other sanitary porcelain;</p> <p>Wholesale of sanitary installation equipment tubes, pipes, fittings, taps, T-pieces, connections, rubber pipes etc.; and</p> <p>Wholesale of tools such as hammers, saws, screwdrivers and other hand tools</p>
4669	<p>Wholesale of waste and scrap and other products n.e.c.</p> <p>This class includes:</p> <p>Wholesale of industrial chemicals;</p> <p>Wholesale of fertilizers and agrochemical products;</p> <p>Wholesale of plastic materials in primary forms;</p> <p>Wholesale of rubber;</p> <p>Wholesale of textile fibres etc.;</p> <p>Wholesale of paper in bulk;</p> <p>Wholesale of precious stones;</p> <p>Wholesale of metal and non-metal waste and scrap and materials for recycling, including collecting, sorting, separating, stripping of used goods such as cars in order to obtain reusable parts, packing and repacking, storage and delivery, but without a real transformation process. Additionally, the purchased and sold waste has a remaining value as well as dismantling of automobiles, computers, televisions and other equipment to obtain and re-sell usable parts</p> <p>This class excludes:</p> <p>Collection of household and industrial waste, see group 381;</p>

Treatment of waste, not for a further use in an industrial manufacturing process, but with the aim of disposal, see group 382;

Processing of waste and scrap and other articles into secondary raw material when a real transformation process is required (the resulting secondary raw material is fit for direct use in an industrial manufacturing process, but is not a final product), see 3830;

Dismantling of automobiles, computers, televisions and other equipment for materials recovery, see 3830;

Shredding of cars by means of a mechanical process, see 3830;

Ship-breaking, see 3830; and retail sale of second-hand goods, see 4774

469 Non-specialized wholesale trade

4690 Non-specialized wholesale trade

This includes wholesale of a variety of goods without any particular specialization

47 Retail trade, except of motor vehicles and motorcycles.

471 Retail sale in non-specialized stores

4711 Retail sale in non-specialized stores with food, beverages or tobacco predominating

This class includes retail sale of a large variety of goods of which, however, food products, beverages or tobacco should be predominant such as retail sale activities of general stores that have, apart from their main sales of food products, beverages or tobacco, several other types of goods such as wearing apparel, furniture, appliances, hardware, cosmetics etc.

This class excludes retail sale of fuel in combination with food, beverages etc., with fuel sales dominating

4719 Other retail sale in non-specialized stores

This class includes retail sale of a large variety of goods of which food products, beverages or tobacco are not predominant,

472	Retail sale of food, beverages and tobacco in specialized stores
4721	<p>Retail sale of food in specialized stores</p> <p>This class includes retail sale of any the following types of goods: fresh or preserved fruit and vegetables, dairy products and eggs, meat and meat products (including poultry), fish, other seafood and products thereof, bakery products, sugar confectionery and other food products</p> <p>This class excludes manufacturing of bakery products, i.e. baking on premises, see 1071</p>
4722	<p>Retail sale of beverages in specialized stores</p> <p>This class includes retail sale of beverages (alcoholic and non-alcoholic beverages) not for consumption on the premises</p>
4723	<p>Retail sale of tobacco products in specialized stores</p> <p>This class includes retail sale of tobacco and tobacco products</p>
473	Retail sale of automotive fuel in specialized stores
4730	<p>Retail sale of automotive fuel in specialized stores</p> <p>This class includes retail sale of fuel for motor vehicles and motorcycles, lubricating products and cooling products for motor vehicles</p> <p>This class excludes wholesale of fuels, retail sale of fuel in combination with food, beverages etc., with food and beverage sales dominating, retail sale of liquefied petroleum gas for cooking or heating</p>
474	Retail sale of information and communications equipment in specialized stores
4741	<p>Retail sale of computers, peripheral units, software and telecommunications equipment in specialized stores</p> <p>This class excludes retail sale of blank tapes and disks</p>
47411	Retail sale of computers
47412	Retail sale of computer peripheral equipment
47413	Retail sale of video game consoles and non-customized software, including video games
47414	Retail sale of telecommunication equipment
4742	Retail sale of audio and video equipment in specialized stores

		This class includes retail sale of radio and television equipment, stereo equipment, CD and DVD players and recorders
475		Retail sale of other household equipment in specialized stores
	4751	Retail sale of textiles in specialized stores
		This class excludes retail sale of clothing
	47511	Retail sale of fabrics and knitting yarn
	47512	Retail sale of basic materials for rug, tapestry or embroidery making
	47513	Retail sale of textiles
	47514	Retail sale of haberdashery: needles, sewing thread etc.
	4752	Retail sale of hardware, paints and glass in specialized stores
	47521	Retail sale of lawnmowers, and hardware; such as, iron sheet, iron bars etc
	47522	Retail sale of paints, varnishes and lacquers
	47523	Retail sale of flat glass
	47524	Retail sale of other building material such as bricks, wood, sanitary equipment and saunas
	47525	Retail sale of do-it-yourself material and equipment
	4753	Retail sale of carpets, rugs, and wall and floor coverings in specialized stores
		This class excludes retail sale of cork floor tiles
	47531	Retail sale of carpets and rugs
	47532	Retail sale of curtains and net curtains
	47533	Retail sale of wallpaper and floor coverings
	4759	Retail sale of electrical household appliances, furniture, lighting equipment and other household articles in specialized stores
		This class excludes retail sale of antiques
	47591	Retail sale of household furniture
	47592	Retail sale of articles for lighting
	47593	Retail sale of household utensils and cutlery, crockery, glassware, china and pottery
	47594	Retail sale of wooden, cork and wickerwork goods
	47595	Retail sale of household appliances

	47596	Retail sale of musical instruments and scores
	47597	Retail sale of security systems, such as locking devices, safes, and vaults, without installation or maintenance services
	47598	Retail sale of household articles and equipment n.e.c.
476		Retail sale of cultural and recreation goods in specialized stores
	4761	Retail sale of books, newspapers and stationery in specialized stores This class excludes retail sale of second-hand or antique books
	47611	Retail sale of books of all kinds
	47612	Retail sale of newspapers
	47613	Retail sale of stationery and office supplies such as pens, pencils, paper etc.
	4762	Retail sale of music and video recordings in specialized stores This class includes retail sale of musical records, audio tapes, compact discs and cassettes, video tapes and DVDs and blank tapes and discs
	4763	Retail sale of sporting equipment in specialized stores; This class includes the retail sale of sports goods, fishing gear, camping goods, boats and bicycles
	4764	Retail sale of games and toys in specialized stores This class includes retail sale of games and toys, made of all materials. This class excludes retail sale of video game consoles, retail sale of non-customized software, including video games
477		Retail sale of other goods in specialized stores
	4771	Retail sale of clothing, footwear and leather articles in specialized stores This class excludes retail sale of textiles
	47711	Retail sale of articles of clothing
	47712	Retail sale of leather goods, leather and leather substitute, umbrellas and clothing accessories such as gloves, ties, braces, fur etc.
	47713	Retail sale of footwear

4772	Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles in specialized store
47721	Retail sale of pharmaceuticals
47722	Retail sale of medical and orthopaedic goods
47723	Retail sale of perfumery and cosmetic articles
4773	Other retail sale of new goods in specialized stores This class includes: Retail sale of photographic, optical, precision equipment and activities of opticians; Retail sale of watches, clocks, jewellery, souvenirs, craftwork and religious articles; Retail sale of flowers, plants, seeds, fertilizers, pet animals and pet food; Activities of commercial art galleries; Retail sale of household fuel oil, bottled gas, coal and fuel wood; Retail sale of cleaning materials; Retail sale of weapons and ammunition; Retail sale of stamps and coins; and Retail sale of non-food products n.e.c.
4774	Retail sale of second-hand goods This class excludes retail sale of second-hand motor vehicles, activities of Internet auctions and other non-store auctions (retail), activities of pawn shops
47741	Retail sale of second-hand books
47742	Retail sale of other second-hand goods
47743	Retail sale of antiques
47744	Activities of auctioning houses (retail)
478	Retail sale via stalls and markets
4781	Retail sale via stalls and markets of food, beverages and tobacco products This class includes retail sale of food, beverages and tobacco products via stalls or markets This class excludes retail sale of prepared food for immediate consumption (mobile food vendors)

4782	Retail sale via stalls and markets of textiles, clothing and footwear
	This class includes retail sale of textiles, clothing and footwear via stalls or markets
4789	Retail sale via stalls and markets of other goods
	This class includes retail sale of other goods via stalls or markets such as carpets and rugs, books, games and toys, household appliances and consumer electronics, music and video recordings
479	Retail trade not in stores, stalls or markets
4791	Retail sale via mail order houses or via Internet
	This class includes retail sale of any kind of product by mail order and over the internet. It also includes internet retail auctions and direct sale via television, radio and telephone.
4799	Other retail sale not in stores, stalls or markets
	This class includes:
	Retail sale of any kind of product in any way that is not included in previous classes by direct sales or door-to-door sales persons through vending machine;
	Direct selling of fuel (heating oil, fire wood etc.), delivered directly to the customers premises;
	Activities of non-store auctions (retail); and
	Retail sale by (non-store) commission agents
	This class excludes delivery of products by stores
68	Real estate activities.
681	Real estate activities with own or leased property
6810	Real estate activities with own or leased property
	This class includes, subdividing real estate into lots, without land improvement and operation of residential mobile home sites
68101	Buying, and selling of real estate
68102	Renting and operating of self-owned or leased real estate
68103	Provision of homes and furnished or unfurnished flats or apartments for more permanent use, typically on a monthly or annual basis

68104	Development of building projects for own operation, i.e. for renting of space in these buildings
	This class excludes, development of building projects for sale, subdividing and improving of land, operation of hotels, suite hotels and similar accommodation, operation of campgrounds, trailer parks and similar accommodation, and operation of workers hostels, rooming houses and similar accommodation,
682	Real estate activities on a fee or contract basis
6820	Real estate activities on a fee or contract basis
	This class includes: activities of real estate agents and brokers, intermediation in buying, selling and renting of real estate on a fee or contract basis, management of real estate on a fee or contract basis, appraisal services for real estate, activities of real estate escrow agents
	This class excludes, legal activities, facilities support services, and management of facilities, such as military bases, prisons and other facilities (except computer facilities management)
95	Repair of computers and personal and household goods.
951	Repair of computers and communication equipment
9511	Repair of computers and peripheral equipment
	This class includes:
	Repair and maintenance of: desktop computers, laptop computers, magnetic disk drives, flash drives and other storage devices, optical disk drives (CD-RW, CD-ROM, DVD-ROM, DVD-RW), printers, monitors, keyboards, mice, joysticks and trackball accessories, internal and external computer modems, dedicated computer terminals, computer servers, scanners, including bar code scanners, virtual reality helmets and computer projectors;
	Repair and maintenance of computer terminals like automatic Teller machines (ATM'S), point of sale (POS) terminals, not Mechanically operated.
	This class excludes:
	Repair and maintenance of carrier equipment modems, see 9512

9512	<p>Repair of communication equipment</p> <p>This class includes:</p> <p>Repair and maintenance of communications equipment such as: cordless telephones, cellular phones, carrier equipment modems, fax machines, communications transmission equipment (e.g. routers, bridges, modems), two-way radios and commercial TV and video cameras.</p>
952	Repair of personal and household goods
9521	<p>Repair of consumer electronics</p> <p>This class includes:</p> <p>Repair and maintenance of consumer electronics: television, radio receivers, video cassette recorders (VCR), CD players and household-type video cameras.</p>
9522	<p>Repair of household appliances and home and garden equipment</p> <p>This class includes:</p> <p>Repair and servicing of household appliances: refrigerators, stoves, washing machines, clothes dryers, room air conditioners, etc.;</p> <p>Repair and servicing of home and garden equipment: lawnmowers, edgers, snow- and leaf- blowers, trimmers, etc.</p> <p>This class excludes:</p> <p>Repair of hand held power tools, see 3312; repair of central air conditioning systems, see 4322</p>
9523	<p>Repair of footwear and leather goods</p> <p>This class includes:</p> <p>Repair and maintenance of footwear: shoes, boots etc. fitting of heels and repair and maintenance of leather goods: luggage and the like</p>
9524	<p>Repair of furniture and home furnishings</p> <p>This class includes:</p> <p>Reupholstering, refinishing, repairing and restoring of furniture and home furnishings including office furniture and assembly of self-standing furniture.</p>

This class excludes:

Installation of fitted kitchens, shop fittings and the like, see 4330.

9529

Repair of other personal and household goods

This class includes:

repair of bicycles; repair and alteration of clothing; repair and alteration of jewellery; repair of watches, clocks and their parts such as watchcases and housings of all materials; movements, chronometers, etc.; repair of sporting goods (except sporting guns); repair of books; repair of musical instruments; repair of toys and similar articles; repair of other personal and household goods; and piano-tuning

This class excludes:

industrial engraving of metals, see 2592; repair of sporting and recreational guns, see 3311; repair of hand held power tools, see 3312 and repair of time clocks, time/date stamps, time locks and similar time recording devices, see 3313

96

Other personal service activities

960

Other personal service activities

9601

Washing and (dry-) cleaning of textile and fur products

This class includes:

laundering and dry-cleaning, pressing etc., of all kinds of clothing (including fur) and textiles, provided by mechanical equipment, by hand or by self-service coin-operated machines, whether for the general public or for industrial or commercial clients; laundry collection and delivery; carpet and rug shampooing and drapery and curtain cleaning, whether on clients' premises or not; provision of linens, work uniforms and related items by laundries; diaper supply services and repair and minor alteration of garments or other textile articles when done in connection with cleaning

This class excludes:

Renting of clothing other than work uniforms, even if cleaning of these goods is an integral part of the activity, see

7730 and repair and alteration of clothing etc., as an independent activity, see 9529.

9602

Hairdressing and other beauty treatment

This class includes:

Hair washing, trimming and cutting, setting, dyeing, tinting, waving, straightening and similar activities for men and women; shaving and beard trimming and facial massage, manicure and pedicure, make-up etc.

This class excludes:

Manufacture of wigs, see 3290

9603

Funeral and related activities

This class includes:

Burial and incineration of human or animal corpses and related activities, rental or sale of graves maintenance of graves and mausoleums.

This class excludes:

Religious funeral service activities see 9491

9609

Other personal service activities n.e.c.

This class includes:

Activities of Turkish baths, sauna and steam baths, solariums, reducing and slendering salons, massage salons etc; astrological and spiritualists' activities; social activities such as escort services, dating services, services of marriage bureaux; pet care services such as boarding, grooming, sitting and training pets; genealogical organizations; shoe shiners, porters, valet car parkers etc. and concession operation of coin-operated personal service machines (photo booths, weighing machines, machines for checking blood pressure, coin-operated lockers etc.)

This class excludes:

Veterinary activities, see 7500; and activities of fitness centers, see 9311

Central Product Classifications (CPC)

Group	Class	Subclass	Description
Section 6			Distributive trade services; accommodation, food and beverage serving services; transport services; and electricity, gas and water distribution services
Division 61			Wholesale trade services
611.			Wholesale trade services, except on a fee or contract basis
612.			Wholesale trade services on a fee or contract basis
Division 62			Retail trade services
621			Non-specialized store retail trade services
622			Specialized store retail trade services
623			Mail order or internet retail trade services
624			Other non-store retail trade services
625			Retail trade services on a fee or contract basis
			Note: In the following codes ***1 to ***99, the symbol *** may stand for 610 and 620 or 611, 612, 621, 622, 623, 624 and 625, depending on the users' needs. However, not all combinations may be applicable.
		***1	Agricultural raw materials and live animals
		***11	Grains, oilseeds and oleaginous fruits, seeds and animal feed
		***12	Flowers and plants
		***13	Unmanufactured tobacco
		***14	Live animals, including pet animals
		***15	Hides, skins and leather
		***19	Agricultural raw materials, n.e.c.
		***2	Food, beverages and tobacco
		***21	Fruit and vegetables
		***22	Dairy products, eggs and edible oils and fats
		***23	Meat, poultry and game
		***24	Fish and other seafood
		***25	Sugar confectionery and bakery products
		***26	Beverages
		***27	Coffee, tea and spices

	***28	Tobacco products
	***29	Food products n.e.c.
***3		Textiles, clothing and footwear
	***31	Yarn and fabrics
	***32	Household linens, curtains, net curtains and diverse household articles of textile materials
	***33	Articles of clothing, articles of fur and clothing accessories
	***34	Footwear
***4		Household appliances, articles and equipment
	***41	Household furniture
	***42	Radio and television equipment and recorded audio and video disks and tapes
	***43	Articles for lighting
	***44	Household appliances
	***45	Miscellaneous household utensils, cutlery, crockery, glassware, china and pottery
	***46	Wickerwork, cork goods, cooper's ware and other wooden ware
***5		Miscellaneous consumer goods
	***51	Books, newspapers, magazines and stationery
	***52	Photographic, optical and precision equipment
	***53	Games and toys
	***54	Watches, clocks and jewellery
	***55	Sports goods (incl. bicycles)
	***56	Leather goods and travel accessories
	***59	Miscellaneous consumer goods n.e.c.
***6		Construction materials and hardware
	***61	Construction materials and flat glass
	***62	Fittings, fixtures and ceramic sanitary fixtures
	***63	Wallpaper and floor coverings
	***64	Paints, varnishes and lacquers
	***65	Hardware and hand tools
***7		Chemical and pharmaceutical products
	***71	Basic industrial chemicals and synthetic resins
	***72	Fertilizers and agrochemical products
	***73	Pharmaceutical products

	7212	Trade services of buildings
	72121	Trade services of residential buildings
	72122	Trade services of non-residential buildings
	72123	Trade services of time-share properties
	7213	72130 Trade services of vacant and subdivided land
722		Real estate services on a fee or contract basis
	7221	Property management services on a fee or contract basis
	72211	Residential property management services on a fee or contract basis except of time-share ownership properties
	72212	Non-residential property management services on a fee or contract basis
	72213	Time-share property management services on a fee or contract basis
	7222	Building sales on a fee or contract basis
	72221	Residential building sales on a fee or contract basis, except of time-share ownership properties
	72222	Non-residential building sales on a fee or contract basis
	72223	Sale of time-share properties on a fee or contract basis
	7223	72230 Land sales on a fee or contract basis
	7224	72240 Real estate appraisal services on a fee or contract basis
Division 87		Maintenance, repair and installation (except construction) services
871		Maintenance and repair services of fabricated metal products, machinery and equipment
	8713	87130 Maintenance and repair services of computers and peripheral equipment
	8714	Maintenance and repair of transport machinery and equipment
	87141	Maintenance and repair services of motor vehicles
	87142	Maintenance and repair services of motorcycles
	87143	Maintenance and repair services of trailers, semi-trailers and other motor vehicles n.e.c.
	8715	Maintenance and repair services of other machinery and equipment
	87151	Maintenance and repair services of electrical household appliances
	87153	Maintenance and repair services of telecommunication equipment

			and apparatus
		87155	Maintenance and repair services of consumer electronics
872			Repair services of other goods
	8721	87210	Repair services of footwear and leather goods
	8722	87220	Repair services of watches, clocks and jewellery
	8723	87230	Repair services of garments and household textiles
	8724	87240	Repair services of furniture
	8729	87290	Maintenance and repair services of other goods n.e.c.
	8739	87390	Installation services of other goods n.e.c.
Division 97			Other services
971.			Washing, cleaning and dyeing services
	9711	97110	Coin-operated laundry services
	9712	97120	Dry-cleaning services (including fur product cleaning services)
	9713	97130	Other textile cleaning services
	9714	97140	Pressing services
	9715	97150	Dyeing and colouring services
972.			Beauty and physical well-being services
	9721	97210	Hairdressing and barbers' services
	9722	97220	Cosmetic treatment, manicuring and pedicuring services
	9723	97230	Physical well-being services
	9729	97290	Other beauty treatment services n.e.c.
973.			Funeral, cremation and undertaking services
	9731	97310	Cemeteries and cremation services
	9732	97320	Undertaking services
979.			Other miscellaneous services
	9791	97910	Escort services
	979	97990	Other miscellaneous services n.e.c.

Tanzania Standard Classification of Occupations (TASCO).

- 8 Plant machine operators, and assemblers
 - 81 Stationary plant and machine operators
 - 811 Mining and mineral processing plant operators
 - 8111 Miners and quarriers

- 8112 Mineral and stone processing plant operators
- 8113 Well drillers and borers and related workers
- 8114 Cement, stone and other mineral products machine operators
- 812 Metal processing and finishing plant operators
 - 8121 Metal processing plant operators
 - 8122 Metal finishing, plating and coating machine operators
- 813 Chemical and photographic products plant and machine operators
 - 8131 Chemical products plant and machine operators
 - 8132 Photographic products machine operators
- 814 Rubber, plastic and paper products machine operators
 - 8141 Rubber products machine operators
 - 8142 Plastic products machine operators
 - 8143 Paper products machine operators
- 815 Textile, fur and leather products machine operators
 - 8151 Fibre preparing, spinning and winding machine operators
 - 8152 Weaving and knitting machine operators
 - 8153 Sewing machine operators
 - 8154 Bleaching, dyeing and fabric cleaning machine operators
 - 8155 Fur and leather preparing machine operators
 - 8156 Shoemaking and related machine operators
 - 8157 Laundry machine operators
 - 8159 Textile, fur and leather products machine operators not elsewhere classified
- 14 Hospitality, retail and other services managers
 - 141 Hotel and restaurant managers
 - 1411 Hotel managers
 - 1412 Restaurant managers
 - 142 Retail and wholesale trade managers
 - 1420 Retail and wholesale trade managers
 - 143 Other services managers
 - 1431 Sports, recreation and cultural centre managers
 - 1432 Personal care, cleaning and related services managers
 - 1433 Safety and security managers
 - 1439 Services managers not elsewhere classified

Chapter Three

Meteorological Statistics

3 Introduction

Meteorological data are a set of information, which describes the characteristics of the atmosphere. When these data are available for a day or a period during the day, they are taken as describing *Weather* characteristics. However, when they are available over a long period of time (usually up to 30 years), their averages are accepted as describing the *Climate* of the place from which they are collected.

Meteorological statistics provides climate and weather information. Climate statistics is used to prepare weather forecast. Climate services provide climate information in a way that assists decision making by individuals and organizations. Such services require appropriate engagement along with an effective access mechanism and must respond to user needs. The climate services involve high-quality data from national and international databases on temperature, rainfall, wind, soil moisture and ocean conditions, as well as maps, risk and vulnerability analyses, assessments, and long-term projections and scenarios. These data and information products may be combined with non-meteorological data, such as agricultural production, health trends, population distributions in high-risk areas, road and infrastructure maps for the delivery of goods, and other socio-economic variables.

Meteorological statistics offered in the country include provision of daily weather forecasts, advisories and warnings, ten day, monthly and seasonal outlooks and climate change projections. These services contribute to the efficiency of operations of various sectors such as, but not limited to:

- i. Safety of humankind, life and property;
- ii. Enhance the understanding of the global atmosphere;
- iii. Provide meteorological and climatological services, advice, products and warnings for sustainable development in various sectors (health, industry, transport, water, energy, environment);
- iv. Research purposes in many disciplines such as detection of climate variability and climate change, extreme weather events such drought, floods and, climate variability and has a critical role in decision making and

- v. Socio-economic wellbeing of the nation by cost effectively using them in forecasting the weather, predicting the climate and providing meteorological services much more efficiently to protect life and property.

3.1 Contribution of Meteorological Services to GDP

The contribution of meteorological services to the GDP is not directly measured. However, weather information and forecasts are of vital importance to main beneficiaries including agriculture and food security, transport, disaster management, energy, health sector, water resources management and construction industry. Others are environment and climate change, tourism and wildlife, academic and research institutions, the public amongst others.

3.2 Scope and Coverage of Meteorological Statistics

Meteorological data sets give details of the characteristics of the atmosphere. Daily data describes the weather characteristic of the given area. The long term meteorological datasets (over decades, 30 years and above) describe climate of the given place from which they are collected. The parameters of the environment commonly measured include solar radiation, sunshine hours, temperature, precipitation (mainly rainfall), humidity, vapour pressure, evaporation, evapotranspiration, wind speed and wind direction. Of all these elements, rainfall is the most often reported in all stations. This is because rainfall is the main climatic feature in developing countries especially Tanzania.

The meteorological network of more than 2000 sites exist in Tanzania with few estimated to be over 100 years. All observed meteorological data around the country are received at the TMA-headquarters in hard or soft copies.

3.3 Main Uses of Meteorological Statistics

Meteorological statistics have several users which include large/small scale farmers, foresters, fisheries, the Civil and Military Aviation Departments, marine and other shipping firms, land transport establishments such as the railways in temperate zones, the construction industry, utility and energy distribution agencies, mining and energy extraction agencies, manufacturers and the general public. Every sector has different uses of meteorological statistics as follows:

- i. **Aviation and military Industry:** Meteorological data provide useful information for aircraft landing and take-off, decisions on route changes, de-icing and likely inconveniences and discomfort arising from altitudinal changes in flight;

- ii. **Marine Rigs:** Meteorological information helps ships captains plan their routes, cease operations and evacuate their cargoes when necessary to protect their equipment;
- iii. **Utilities & Energy Production:** As electricity production in Tanzania is mostly hydro, any data that aids the knowledge of water flows and water levels in the dams are of particular relevance. Meteorological data are particularly vital in this regard. They aid in monitoring water level in most hydro-electric power stations and the expected seasonal variations as well as long-term changes that may occur and which may have adverse effects on water levels. Lack of such data can result in erratic supply of electricity;
- iv. **Land Transport:** Meteorological data are also relevant in providing information about temperature and rainfall and other weather parameters that can affect land transport. In temperate zones, information on snow fall, ice removal from rail lines are given prominence, and are significant in planning the movement of vehicles;
- v. **Agriculture:** Meteorological data are useful in planning farm schedules such as seed and seedling planting, fertilizer application, irrigation, crop monitoring (especially against pest infestation) as well as harvesting and storage of farm produce. They are also useful in livestock keeping and frost protection;
- vi. **Forestry:** Meteorological data are also important in the forestry sector for the timing of tree planting and watering (particularly in the arid and semi-arid areas), in the prevention of loss of valuable timber species and wildlife arising from fire hazards and severe drought through early warning system;
- vii. **Fishery:** In fishery, meteorological data are useful as a guide in the establishment of fish ponds where rain is the main source of water. They are also significant in fishing on large bodies of water, particularly oceans and seas. Meteorological data provide early warnings on fogs and wind characteristics which are critical in the choice of fishing sites and timing; and
- viii. **Construction:** Civil engineering works are affected significantly by weather and climatic characteristics. Thus, meteorological data are relevant for planning and decision making in the construction.

3.4 Frequency of Collecting Meteorological Data

Basically the meteorological data collection is conducted as the surface synoptic stations with a continuous weather watch; making hourly/half hourly instrumental observations in 24 hours daily. Agro-meteorological stations collect data up to 12 hours observation every day while Upper air stations and weather radars releasing radio sondes once every day for capturing the upper level elements. The National Meteorological Services (NMS) also operates other station networks in collaboration with other institutions; these include climatological and rainfall stations (these are none-real observation data collection).

3.5 Challenges Facing Meteorological Statistics

Due to increased climate variability and change, the demand for timely and quality weather and climate information has increased. However, the following challenges are faced in obtaining the meteorological statistics in Tanzania:

- i. The scarcity of the observation networks;
- ii. Lack of permanent office of National Forecasting Center;
- iii. Limited ocean observations and modelling skills;
- iv. Limited staff available in ocean sciences, Numerical Weather Prediction (NWP), Radar Technician and Operators;
- v. Funds to conduct research in climate change;
- vi. Financial constrain in modernisation of the available met stations and equipment; and
- vii. Funds to rescue and digitize the historical climatic data in deteriorating paper forms.

3.6 Sources and Methods of Producing Meteorological Statistics

3.6.1 Sources

The Tanzania Meteorological Agency is the primary outlet of meteorological data in the country. There are several stations from which the data is collected. The following are main stations:

Table 1: Types of Meteorological Stations

Type of Station	Number of stations
Synoptic stations	26
Agro meteorological stations	13
Rainfall stations	1887
Automatic Weather Stations	21
Radar Weather Stations	2
Upper Air stations	5
Climate stations	129
Marine station	3
Total	2086

Source: Tanzania Meteorological Agency

3.6.2 Methods

Methods of obtaining weather observations can be in the following forms:

- i. Direct reading of the basic meteorological elements from their respective measuring instruments at predetermined intervals.
- ii. Extracting the elements' values from autographic charts wound round clock-driven devices, e.g. temperature, pressure, etc.
- iii. Visual observation of the parameters by the observer, e.g. cloud amount.
- iv. Estimating the parameters' values from satellite pictures.
- v. Deriving the parameters' values from some of the observed basic ones.

3.7 Data Dissemination and Archives

Compiled meteorological statistics are disseminated to different stakeholders in hard copies and soft copies through TMA website (www.meteo.go.tz), TMA's emails: data@meteo.go.tz and met@meteo.go.tz and publications i.e Meteorological Bulletins: decadal, monthly and seasonal bulletin.

3.8 Database Coding System

Under this sub section details on ISIC Rev.4, CPC and TASCO are explained.

International Standard Industrial Classification of all economic activities (ISIC Rev 4)

Division	Group	Class	Subclass	Description
74				Other professional, scientific and technical activities.
	741			Specialized design activities
		7410		Specialized design activities This class includes, fashion design related to textiles, wearing apparel, shoes, jewelry, furniture and other interior decoration and other fashion goods as well as other personal or household goods, industrial design, i.e. creating and developing designs and specifications that optimize the use, value and appearance of products, including the determination of the materials, construction, mechanism, shape, color and surface finishes of the product, taking into consideration human characteristics and needs, safety, market appeal and efficiency in production, distribution, use and maintenance, activities of graphic designers, activities of interior decorators. This class excludes design and programming of web pages, architectural design, engineering design, i.e. applying physical laws and principles of engineering in the design of machines, materials, instruments, structures, processes and systems, and theatrical stage-set design,
	742			Photographic activities
		7420		Photographic activities This class includes commercial and consumer photograph production, film processing, activities of photojournalists. This class also includes, microfilming of documents. This class excludes: Processing motion picture film related to the motion picture and television industries, cartographic and spatial information activities,
	749			Other professional, scientific and technical activities n.e.c.
		7490		Other professional, scientific and technical activities n.e.c.

This class includes a great variety of service activities generally delivered to commercial clients. It includes those activities for which more advanced professional, scientific and technical skill levels are required, but does not include ongoing, routine business functions that are generally of short duration. It also includes translation and interpretation activities, business brokerage activities, i.e. arranging for the purchase and sale of small and medium-sized businesses, including professional practices, but not including real estate brokerage, patent brokerage activities (arranging for the purchase and sale of patents, appraisal activities other than for real estate and insurance (for antiques, jewellery, etc, bill auditing and freight rate information, activities of quantity surveyors, weather forecasting activities, security consulting, agronomy consulting, environmental consulting, other technical consulting, activities of consultants other than architecture, engineering and management consultants and activities carried on by agents and agencies on behalf of individuals usually involving the obtaining of engagements in motion picture, theatrical production or other entertainment or sports attractions and the placement of books, plays, artworks, photographs etc., with publishers, producers etc.

This class excludes:

Wholesale of used motor vehicles by auctioning, online auction activities (retail), activities of auctioning houses (retail), activities of real estate brokers, bookkeeping activities, activities of management consultants, activities of architecture and engineering consultants engineering design activities, display of advertisement and other advertising design, creation of stands and other display structures and sites, industrial design activities, activities of convention and trade show organizers, activities of independent auctioneers administration of loyalty programmes, consumer credit and debt counseling, activities of authors of scientific and technical books, and activities of independent journalists.

Central Product Classifications (CPC)

Group	Class	Subclass	Description
Section 8			Business and production services
Division 83			Other professional, technical and business services
834			Scientific and other technical services
	8343	83430	Weather forecasting and meteorological services
839			Other professional, technical and business services n.e.c.
	8391		Specialty design services
		83911	Interior design services
		83912	Industrial design services
		83919	Other specialty design services
	8392	83920	Design originals
	8393		Scientific and technical consulting services n.e.c.
		83931	Environmental consulting services
		83939	Other scientific and technical consulting services n.e.c.
	8395	83950	Translation and interpretation services
	8399	83990	All other professional, technical and business services, n.e.c.
852.			Investigation and security services
859.			Other support services
	8599		Other information and support services n.e.c.
		85991	Other information services

Tanzania Standard Classification of Occupations (TASCO)

2 Professionals

21 Science and engineering professionals

211 Physical and earth science professionals

2111 Physicists and astronomers

2112 Meteorologists

2113 Chemists

2114 Geologists and geophysicists

Meteorological codes

The codes are composed of the set of values defined in tables with reference to specific position within strings of information. These defined values make up a code form and binary codes are made up of groups of letters representing meteorological or other geophysical elements. Different code forms are used to represent different types of observations or products. In messages, these groups of letters are transcribed into figures indicating the value of state of the elements described. Meteorological codes are described according to the World Meteorological Organization (WMO) standard (WMO-No.306).

It is better to note that not all meteorological information rendered by the NMS are coded. The only information that is issued coded language is the information for aviation and marine industry. Other services are provided in the normal language.

Meteorological parameters are coded in a various ways. For example meteorological observation stations are coded according to the WMO identification code.

Table 2: Special codes for Meteorological Stations in Tanzania

Station	TMA Station ID. NO.	WMO Code.
Bukoba MET	9131002	63729
Dar-es-Salaam International Airport	9639029	63894
Dodoma Airport	9635001	63862
Iringa MET Stn.(Nduli)	9735013	63887
Kigoma Airport	9429018	63801
Kilimanjaro International Airport	9337115	63791
Kisauni Airport (Z'bar)	9639028	63870
Mbeya MET	9833001	63932
Mtwara Airport	10040004	63971
Musoma MET.	9133000	63733
Mwanza Airfield	9232009	63756
Songea Airfield	10035010	63962
Sumbawanga	9731028	63881
Tabora MET.Station	9532012	63832
Arusha Airport	9336033	63789
Pemba (Karume)	9539026	63845
Morogoro	9637076	63866
Moshi	9337004	63790
Same	9437003	63816
Tanga	9539015	63844
Mahenge	9836027	63936
Handeni	9538088	63840
Singida	9434042	63810
Shinyanga	9333063	63784
Kilwa MET	9839010	63940

Station	TMA Station ID. NO.	WMO Code.
Dar Port	9639064	
Kibaha	9638027	
Naliendele	10040007	
Uyole	9833025	
Ukiriguru	9233044	
Lyamungu	9337021	
Igeri	9934029	
Ilonga	9637032	
Mlingano	9538011	
Hombolo	9535019	
Tumbi	9532013	
Kizimbani	9639011	

Source: Tanzania Meteorological Agency

The weather information used by the aviation industry is received in coded format (WMO-No. 306). For example: SPECI, METAR and SYNOP code. The code "METAR" is the Aerodrome routine meteorological report (with or without trend forecast), usually reported hourly. SPECI is the Aerodrome special meteorological report (with or without trend forecast), usually reported half hourly when there is a detected severe weather. SYNOP is the surface meteorological observation routine (aerodrome), which is reported after every 3 hours.

List of Code Forms with Notes and Regulations

FM 12–XIV Ext. SYNOP: Report of surface observation from a fixed land station

FM 13–XIV Ext. SHIP: Report of surface observation from a sea station

FM 14–XIV Ext. SYNOP MOBIL: Report of surface observation from a mobile land station

CODE FORM:

SECTION 0: $M_i M_i M_j M_j$ D D**** YYGG i_w IIiii*

SECTION 1: $i_R i_x h$ VV Nddff (00fff) 1snTTT 2snTdTdTd or 29UUU 3P0P0P0P0 4PPPP
or 4a3hhh 5appp 6RRRtR 7wwW1W2 or 7wawaWa1Wa2 8NhCLCMCH 9GGgg

SECTION 2: 222Dsvs ($0_{ss} T_w T_w T_w$) ($1P_{wa} P_{wa} H_{wa} H_{wa}$) ($2P_w P_w H_w H_w$) (($3d_{w1} d_{w1} d_{w2} d_{w2}$)
($4P_{w1} P_{w1} H_{w1} H_{w1}$) ($5P_{w2} P_{w2} H_{w2} H_{w2}$)) ($6I_s E_s E_s R_s$ or ICING + plain language)
($70H_{wa} H_{wa} H_{wa}$) ($8s_w T_b T_b T_b$) (ICE + $c_i S_i b_i D_i Z_i$ or plain language)

SECTION 3: 333 (0) ($1s_n T_x T_x T_x$) ($2s_n T_n T_n T_n$) (3Ejjj) (4E'sss) (5j1j2j3j4 (j5j6j7j8j9))(6RRRtR)
(7R24R24R24R24) (8NsChshs) (9SpSpSpSp) (80000 (0) (1))

SECTION 4: 444 N'C'H'H'C_t

SECTION 5: 555 Groups to be developed nationally

Notes:

- 1) The code form FM 12 SYNOP is used for reporting synoptic surface observations from a fixed land station, manned or automatic. The code form FM 13 SHIP is used for the same kind of observations from a sea station, manned or automatic. The code form FM 14 SYNOP MOBIL is used for surface observations from an automatic or manned land station not at a fixed location.
- 2) A SYNOP report from a fixed land station is identified by the symbolic letters MiMiMjMj AAXX.
- 3) A SHIP report from a sea station is identified by the symbolic letters MiMiMjMj = BBXX.
- 4) A SYNOP MOBIL report from a mobile land station is identified by the symbolic letters MiMiMjMj = OOX
- 5) The code form is made up of figure groups arranged by sections in ascending order of their numerical indicators with the exception of the following:
 - (a) All the groups of Section 0 and for the first two groups of Section 1, which are always included in the report of any surface observing station;
 - (b) The first data group of Section 2 – 222Dsvs, which is always included in the report of a sea station if data are available;
 - (c) The data group of Section 4, which is clearly identified by a three-figure indicator group.
 - (d) The loss of information due to the accidental loss of any one of these groups is strictly limited to the information content of that group;
 - (e) The rules of inclusion or omission of sections or of groups between brackets can be laid down for each specific case of station type or of data requirements;
 - (f) The length of the report can be kept to a strict minimum by dropping out some groups whenever their information content is considered insignificant or when that information content is not normally available. It is to be noted that the code word ICE of Section 2 plays the role of a numerical indicator for the last data group of the section or for the equivalent plain language information.
- 6) The code form is divided into a number of sections as follows:

Table 3: Code Form

Section No.	Symbolic figure group contents
0	Data for reporting identification (type, ship's call sign/buoy identifier, date, time, location) and units of wind speed used
1	Data for global exchange which are common to the SYNOP, SHIP and SYNOP MOBIL code forms
2	222 Maritime data for global exchange pertaining to a sea, or to a coastal station
3	333 Data for regional exchange
4	444 Data for national use for clouds with base below station level, included by national decision
5	555 Data for national use

Source: Tanzania Meteorological Agency

Precipitation

The amount of precipitation or water equivalent of solid precipitation or diameter of solid deposit is observed and collected daily in half hourly, hourly or within 24 hours depending on the type of required information. For example for climatological purposes this information is taken in the routine of 24 hours in every hour or every 24 hours for extended period. On the other hand, the aviation information is needed in every half hourly or hourly information.

The coding system of rainfall varies with amount, time, type and intensity. For example the following table shows how precipitation amount is coded:

Table 4: Amount of Precipitations

Code figure	mm	Code figure	mm	Code figure	mm
00	0	34	34	68	180
01	1	35	35	69	190
02	2	36	36	70	200
03	3	37	37	71	210
04	4	38	38	72	220
05	5	39	39	73	230
06	6	40	40	74	240
07	7	41	41	75	250
08	8	42	42	76	260
09	9	43	43	77	270
10	10	44	44	78	280
11	11	45	45	79	290
12	12	46	46	80	300
13	13	47	47	81	310
14	14	48	48	82	320
15	15	49	49	83	330
16	16	50	50	84	340
17	17	51	51	85	350
18	18	52	52	86	360
19	19	53	53	87	370
20	20	54	54	88	380
21	21	55	55	89	390
22	22	56	60	90	400
23	23	57	70	91	0.1
24	24	58	80	92	0.2
25	25	59	90	93	0.3
26	26	60	100	94	0.4
27	27	61	110	95	0.5
28	28	62	120	96	0.6
29	29	63	130	97	A little precipitation, non-measurable
30	30	64	140	98	More than 400 mm
31	31	65	150	99	Measurement impossible
32	32	66	160		
33	33	67	170		

Source: World Meteorological Organization

Temperature

The temperature observation is obtained in different surfaces: sea (water), land surface and upper air level. The coding system of temperature in different levels and type is not the same. For example, 10m level air temperature, dew point temperature, maximum and minimum temperature are coded differently. The following table shows how temperature is coded:

Table 5: Temperature**3955**

T_w	<i>Variation of temperature during the period covered by W₁W₂, associated with glaze or rime</i>
Code figure	
0	Temperature steady
1	Temperature falling, without going below 0°C
2	Temperature rising, without going above 0°C
3	Temperature falling to a value below 0°C
4	Temperature rising to a value above 0°C
5	Irregular variation, oscillations of temperature passing through 0°C
6	Irregular variation, oscillations of temperature not passing through 0°C
7	Variation of temperature not observed
8	Not allocated
9	Variation of temperature unknown owing to lack of thermograph

3956

T_n	<i>Minimum air temperature</i>
T_x	<i>Maximum air temperature</i>
Code figure	Temperature in degrees Celsius
0	Less than -10
1	-10 to -5
2	-5 to -1
3	About 0 (to nearly ± 1)
4	1 to 5
5	5 to 10
6	10 to 20
7	20 to 30
8	Greater than 30
9	Temperature not forecast

Source: World Meteorological Organization

Wind

The wind speed and direction is coded in the group Ndddf. Whereby the 'N' value represents the amount the total cloud cover; 'dd' represents wind direction. The mean direction and speed of the wind over the 10-minute period immediately preceding the observation shall be reported for ddff. However, when the 10-minute period includes a discontinuity in the wind characteristics, only data obtained after the discontinuity shall be used for reporting the mean values, and hence the period in these circumstances shall be correspondingly reduced.

Note that; in the absence of wind instruments, the wind speed shall be estimated on the basis of the Beaufort wind scale. The Beaufort number obtained by estimation is converted into metres per

second or knots by the use of the wind speed equivalent columns of the Beaufort scale, and this speed is reported for ff. The following table is the Beaufort scale of wind:

Table 6: Beaufort Scale of Wind

BEAUFORT NUMBER	DESCRIPTIVE TERM	VELOCITY EQUIVALENT AT A STANDARD HEIGHT OF 10 METRES ABOVE OPEN FLAT GROUND				SPECIFICATIONS			Probable wave height* in metres	Probable wave height* in feet
		Mean velocity in knots	m s ⁻¹	km h ⁻¹	m.p.h.	Land	Sea	Coast		
0	Calm	< 1	0–0.2	< 1	< 1	Calm; smoke rises vertically	Sea like a mirror	Calm	—	—
1	Light air	1–3	0.3–1.5	1–5	1–3	Direction of wind shown by smoke drift but not by wind vanes	Ripples with the appearance of scales are formed, but without foam crests	Fishing smack just has steerage way	0.1 (0.1)	¹ / ₄ (¹ / ₄)
2	Light breeze	4–6	1.6–3.3	6–11	4–7	Wind felt on face; leaves rustle; ordinary vanes moved by wind	Small wavelets, still short but more pronounced; crests have a glassy appearance and do not break	Wind fills the sails of smacks which then travel at about 1–2 knots	0.2 (0.3)	¹ / ₂ (1)
3	Gentle breeze	7–10	3.4–5.4	12–19	8–12	Leaves and small twigs in constant motion; wind extends light flag	Large wavelets; crests begin to break; foam of glassy appearance; perhaps scattered white horses	Smacks begin to careen and travel about 3–4 knots	0.6 (1)	2 (3)
4	Moderate breeze	11–16	5.6–7.9	20–28	13–18	Raises dust and loose paper; small branches are moved	Small waves, becoming longer; fairly frequent white horses	Good working breeze, smacks carry all canvas with good list	1 (1.5)	3 ¹ / ₂ (5)
5	Fresh breeze	17–21	8.0–10.7	29–38	19–24	Small trees in leaf begin to sway; crested wavelets form on inland waters	Moderate waves, taking a more pronounced long form; many white horses are formed (chance of some spray)	Smacks shorten sail	2 (2.5)	6 (8 ¹ / ₂)
6	Strong breeze	22–27	10.8–13.8	39–49	25–31	Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty	Large waves begin to form; the white foam crests are more extensive everywhere (probably some spray)	Smacks have double reef in mainsail; care required when fishing	3 (4)	9 ¹ / ₂ (13)
7	Near gale	28–33	13.9–17.1	50–61	32–38	Whole trees in motion; inconvenience felt when walking against wind	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind	Smacks remain in harbour and those at sea lie to	4 (5.5)	13 ¹ / ₂ (19)
8	Gale	34–40	17.2–20.7	62–74	39–46	Breaks twigs off trees; generally impedes progress	Moderately high waves of greater length; edges of crests begin to break into the spindrift; the foam is blown in well-marked streaks along the direction of the wind	All smacks make for harbour, if near	5.5 (7.5)	18 (25)
9	Strong gale	41–47	20.8–24.4	75–88	47–54	Slight structural damage occurs (chimney pots and slates removed)	High waves; dense streaks of foam along the direction of the wind; crests of waves begin to topple, tumble and roll over; spray may affect visibility	—	7 (10)	23 (32)
10	Storm	48–55	24.5–28.4	89–102	55–63	Seldom experienced inland; trees uprooted; considerable structural damage occurs	Very high waves with long overhanging crests; the resulting foam, in great patches, is blown in dense white streaks along the direction of the wind; on the whole, the surface of the sea takes on a white appearance; the tumbling of the sea becomes heavy and shock-like; visibility affected	—	9 (12.5)	29 (41)
11	Violent storm	56–63	28.5–32.6	103–117	64–72	Very rarely experienced; accompanied by widespread damage	Exceptionally high waves (small and medium-sized ships might be for a time lost to view behind the waves); the sea is completely covered with long white patches of foam lying along the direction of the wind; everywhere the edges of the wave crests are blown into froth; visibility affected	—	11.5 (16)	37 (52)
12	Hurricane	64 and over	32.7 and over	118 and over	73 and over	—	The air is filled with foam and spray; sea completely white with driving spray; visibility very seriously affected	—	14 (—)	45 (—)

* This table is only intended as a guide to show roughly what may be expected in the open sea, remote from land. It should never be used in the reverse way; i.e., for logging or reporting the state of the sea. In enclosed waters, or when near land, with an offshore wind, wave heights will be smaller and the waves steeper. Figures in brackets indicate the probable maximum height of waves.

Source: World Meteorological Organization

Table 7 represents the International code which indicates type of the parameters used in the coding system ($a_1a_1a_1$, $a_2a_2a_2$). For example the first part of Table 7 (code figures 000–099) shall be used without the inclusion in the report of the optional group 2nTnTa1a2. Parameters in the latter part of the codes (100–999) can only be used with the inclusion in the report of the optional group 2nTnTa1a2. When $a_1a_1a_1/a_2a_2a_2$ represent weather phenomena (code figures 080–090 of Table 7), the code figure for n_1/n_2 shall be 1, and the data content for each grid point and for each phenomenon reported shall contain one digit chosen out of (0, 1) or (0, 1 and 2) as specified in Table 7 to indicate the occurrence and/or the intensity of the phenomenon.

Table 7: International Codes by Type of Parameters

$a_1a_1a_1$, $a_2a_2a_2$ Type of parameter

Code figure	Field parameter	Reference value	Unit	Occurrence and/or intensity of phenomenon	Remarks
000	—	—	—		Indicates missing parameter
001	Pressure	0 hPa	1 hPa		
002	Geopotential height	0 gpm	10 gpm		
003	Geometrical height	0 m	10 m		
004	Temperature	0°C	1°C		
005	Maximum temperature	0°C	1°C		Surface level only
006	Minimum temperature	0°C	1°C		Surface level only
007	Temperature deviation from normal	0°C	1°C		
008	Potential temperature	0°C	1°C		
009	Pseudo-adiabatic potential temperature	0°C	1°C		
010	Dew-point temperature	0°C	1°C		
011	Dew-point depression (or deficit)	0°C	1°C		
012	Specific humidity	0 g kg ⁻¹	0.1 g kg ⁻¹		
013	Relative humidity	0 %	1 %		
014	Humidity mixing ratio	0 g kg ⁻¹	0.1 g kg ⁻¹		
015	Stability index	0°C	1°C		See Code table 2677 for specific parameters
016	Saturation deficit	0 hPa (for a specific level) 0 gpm (for a specific layer)	0.1 hPa 10 gpm		
017	4-layer lifted index	0°C	1°C		
018					Reserved
019					
020	Wind direction	0°	10°		
021	Wind speed	0 m s ⁻¹	1 m s ⁻¹		
022	Wind direction and speed	0°, 0 m s ⁻¹	5°, 1 m s ⁻¹		TEMP code form

Table 8 (ctd): International Codes by Type of Parameters

Code figure	Field parameter	Reference value	Unit	Occurrence and/or intensity of phenomenon	Remarks
023}	Wind components	0 m s ⁻¹	1 m s ⁻¹		Relative to coordinate system used
024}					
025	Wind speed	0 kt	1 kt		
026	Wind direction and speed	0°, 0 kt	5°, 1 kt		TEMP code form
027}	Wind components	0 kt	1 kt		Relative to coordinate system used
028}					
029	Stream function	0 m ² s ⁻¹	10 ⁶ m ² s ⁻¹		
030	Relative vorticity	0 s ⁻¹	10 ⁻⁶ s ⁻¹		
031	Absolute vorticity	0 s ⁻¹	10 ⁻⁶ s ⁻¹		
032	Relative vorticity advection	0 s ⁻²	10 ⁻⁸ s ⁻²		
033	Absolute vorticity advection	0 s ⁻²	10 ⁻⁸ s ⁻²		
034	Horizontal velocity divergence	0 s ⁻¹	10 ⁻⁶ s ⁻¹		
035	Horizontal moisture divergence	0 g kg ⁻¹ s ⁻¹	0.1 g kg ⁻¹ s ⁻¹		
036	Geostrophic vorticity	0 s ⁻¹	10 ⁻⁶ s ⁻¹		
037	Geostrophic vorticity advection	0 s ⁻²	10 ⁻⁸ s ⁻²		
038					Reserved
039	Velocity potential	0 m ² s ⁻¹	10 ³ m ² s ⁻¹		
040	Vertical velocity (↓)	0 cb s ⁻¹	10 ⁻¹ cb s ⁻¹		
041	Vertical velocity (↓)	0 cb/12 h	1 cb/12 h		
042	Vertical velocity (↓)	0 hPa h ⁻¹	1 hPa h ⁻¹		
043	Vertical velocity (↑)	0 mm s ⁻¹	1 mm s ⁻¹		
044	Vertical wind shear	0 m s ⁻¹ /1 000 m	1 m s ⁻¹ /1 000 m		
045	Vertical wind shear	0 kt/1 000 m	1 kt/1 000 m		
046	Lapse rate	0°C/100 m	0.1°C/100 m		
047	Precipitable water	0 mm	1 mm		
048	Convective precipitation amount	0 mm	1 mm		
049	Precipitation rate	0 mm h ⁻¹	1 mm h ⁻¹		
050	Precipitation amount	0 mm	1 mm		Surface level only
051	Snow depth	0 cm	1 cm		Surface level only
052	Outgoing long-wave radiation	0 joule	0.1 joule (1 J = 10 ⁷ ergs)		Integrated over 24 hours
053	Outgoing short-wave radiation	0 joule	0.1 joule		Integrated over 24 hours
054	Incoming short-wave radiation	0 joule	0.1 joule		Integrated over 24 hours
055	Non-convective precipitation amount	0 mm	1 mm		
056}					Reserved
057}					
058	Afternoon SST warming	0°C	0.01°C		
059	Temperature anomaly	0°C	0.01°C		
060	Deviation of sea level from mean	0 cm	1 cm		
061	Sea temperature	0°C	0.1°C		
062	Salinity	0 ‰			
063	Density				
064	Significant height of combined wind waves and swell	0 m	0.5 m		Threshold value of 0.5 m
065	Direction of swell	0°	10°		
066	Significant height of swell	0 m	0.5 m		Threshold value of 0.5 m
067	Mean period of swell	0 s	1 s		
068	Direction of wind waves	0°	10°		
069	Significant height of wind waves	0 m	0.5 m		Threshold value of 0.5 m
070	Mean period of wind waves	0 s	1 s		

Table 9 (ctd): International Codes by Type of Parameters

Code figure	Field parameter	Reference value	Unit	Occurrence and/or intensity of phenomenon	Remarks
071	Direction of current	0°	10°		
072	Speed of current	0 cm s ⁻¹	1 cm s ⁻¹		
073	Current components	0 cm s ⁻¹	1 cm s ⁻¹		Relative to coordinate system used
074					
075	Primary wave direction	0°	10°		
076	Primary wave period	0 s	1 s		
077	Secondary wave direction	0°	10°		
078	Secondary wave period	0 s	1 s		
079	Cloud cover		0, 1, 2, 3, 4, 5, 6, 7, 8		Cloud amount in oktas (see Code table 2677 for specific parameters)
080	Thunderstorm			0, 1	0 = absent, 1 = occurring
081	Tropical revolving storm			0, 1	0 = absent, 1 = occurring
082	Line squall			0, 1	0 = absent, 1 = occurring
083	Hail			0, 1	0 = absent, 1 = occurring
084	Turbulence (generally associated with cloud)			0, 1, 2	0 = nil or slight, 1 = moderate, 2 = severe
085	Clear air turbulence			0, 1, 2	0 = nil or slight, 1 = moderate, 2 = severe
086	Icing			0, 1, 2	0 = nil or slight, 1 = moderate, 2 = severe
087	Mountain waves			0, 1	0 = absent, 1 = occurring
088	Sandstorm/duststorm			0, 1	0 = absent, 1 = occurring
089	Freezing rain			0, 1	0 = absent, 1 = occurring
090	Ice concentration			0, 1	0 = no sea ice, 1 = occurrence of sea ice
091	Ice thickness	0 m	1 m		
092	Ice drift u-component	0 km/day	1 km/day		
093	Ice drift v-component	0 km/day	1 km/day		
094	Ice growth	0 dm	1 dm		
095	Ice convergence/divergence	0 s ⁻¹	1 s ⁻¹		
096					Reserved
097					
098					
099					
100	Pressure	0 daPa	1 daPa		
101	Geopotential thickness	0 gpm	1 gpm		
102	Geopotential height	0 gpm	1 gpm		
103	Geometrical height	0 m	1 m		
104	Temperature	0°C	0.1°C		
105					Reserved
.					
.					
.					
111					
112	Specific humidity	0 kg kg ⁻¹	1 kg kg ⁻¹		
113	Relative humidity	0 %	0.1 %		
114	Humidity mixing ratio	0 kg kg ⁻¹	1 kg kg ⁻¹		
115	Stability (lifted) index	0°C	0.1°C		
116	Saturation deficit	0 hPa	1 hPa		
		0 gpm	1 gpm		

Table 10 (ctd): International Codes by Type of Parameters

Code figure	Field parameter	Reference value	Unit	Occurrence and/or intensity of phenomenon	Remarks
117	Wind direction	0°	1°		Reserved
118					
119					
120					
121					Reserved
.					
.					
.					
128	Stream function	0 m ² s ⁻¹	1 m ² s ⁻¹		
129	Relative vorticity	0 s ⁻¹	10 ⁻⁶ s ⁻¹		
130	Absolute vorticity	0 s ⁻¹	10 ⁻⁶ s ⁻¹		
131	Relative vorticity advection	0 s ⁻²	1 s ⁻²		
132	Absolute vorticity advection	0 s ⁻²	1 s ⁻²		
133	Horizontal velocity divergence	0 s ⁻¹	1 s ⁻¹		
134	Horizontal moisture divergence	0 kg kg ⁻¹ s ⁻¹	1 kg kg ⁻¹ s ⁻¹		
135	Geostrophic vorticity	0 s ⁻¹	1 s ⁻¹		
136	Geostrophic vorticity advection	0 s ⁻²	1 s ⁻²		
137					Reserved
138	Velocity potential	0 m ² s ⁻¹	1 m ² s ⁻¹		
139	Vertical velocity (↓)	0 hPa s ⁻¹	1 hPa s ⁻¹		
140	Vertical velocity (↓)	0 dPa s ⁻¹	1 dPa s ⁻¹		
141			(1 microbar s ⁻¹)		
142					Reserved
143	Vertical velocity (↑)	0 m s ⁻¹	1 m s ⁻¹		
144	Vertical wind shear	0 m s ⁻¹ /1 m	1 m s ⁻¹ /1 m		
145					Reserved
146	Lapse rate	0°C/1 m	1°C/1 m		
147	Precipitable water	0 m	1 m		
148					Reserved
149	Precipitation rate	0 m s ⁻¹	1 m s ⁻¹		
150	Precipitation amount	0 m	1 m		
151	Snow depth	0 m	1 m		
152	Outgoing long-wave radiation	0 joule	1 joule (1 J = 10 ⁷ ergs)		
153	Outgoing short-wave radiation	0 joule	1 joule		
154	Incoming short-wave radiation	0 joule	1 joule		
155					Reserved
156					
157					
158					
159	Deviation of sea level from mean	0 m	1 m		
160	Sea temperature	0°C	1°C		
161	Sea-surface temperature	0°C	0.01°C		
162	SST anomaly	0°C	0.01°C		
163	Significant height of combined wind waves and swell	0 m	1 m		
164	Direction of swell	0°	1°		
165	Significant height of swell	0 m	1 m		
166					Reserved
167					

Table 11 (ctd): International Codes by Type of Parameters

Code figure	Field parameter	Reference value	Unit	Occurrence and/or intensity of phenomenon	Remarks
168	Direction of wind waves	0°	1°		
169	Significant height of wind waves	0 m	1 m		
170					Reserved
171	Direction of current	0°	1°		
172	Speed of current	0 m s ⁻¹	1 m s ⁻¹		
173	Current components	0 cm s ⁻¹	1 cm s ⁻¹		
174					
175					
176					
177					Reserved
178					
179					
180	Mixed layer depth	0 cm	1 cm		
181	Transient thermocline depth	0 cm	1 cm		
182	Main thermocline depth	0 cm	1 cm		
183	Main thermocline depth anomaly	0 cm	1 cm		
184					
.					
.					Reserved
.					
201					
202	Pressure reduced to mean sea level	0 hPa	1 hPa		
203	Pressure tendency	0 hPa/3 h	0.1 hPa/3 h		
204					
.					
.					Reserved
.					
211					
212	Virtual temperature	0°C	1°C		
213					
.					
.					Reserved
.					
220					
221	Radar spectra				Direction and frequency
222	Radar spectra				Direction and radial number
223	Radar spectra				Radial number and radial number
224					
225					Reserved
226	Pressure anomaly	0 hPa	1 hPa		
227	Geopotential height anomaly	0 gpm	1 gpm		
228	Wave spectra				Direction and frequency
229	Wave spectra				Direction and radial number
230	Wave spectra				Radial number and radial number
231					
.					
.					Reserved
.					
237					
238	Sigma coord. vertical velocity	0 s ⁻¹	1 s ⁻¹		

Table 12 (ctd): International Codes by Type of Parameters

Code figure	Field parameter	Reference value	Unit	Occurrence and/or intensity of phenomenon	Remarks
239 } 240 } 241 }					Reserved
242	Absolute divergence	0 s ⁻¹	1 s ⁻¹		
243					Reserved
244	Relative divergence	0 s ⁻¹	1 s ⁻¹		
245	Vertical u-component shear	0 s ⁻¹	1 s ⁻¹		
246	Vertical v-component shear	0 s ⁻¹	1 s ⁻¹		
247 } · } · } · }					Reserved
254					
255	Vapour pressure	0 hPa	1 hPa		
256					Reserved
257	Evaporation	0 mm	1 mm		
258 } 259 }					Reserved
260	Thunderstorm probability	0 %	1 %		
261 } 262 } 263 }					Reserved
264	Snowfall rate water equivalent	0 kg m ⁻²	1 kg m ⁻²		
265	Water equivalent of acc. snow	0 kg m ⁻²	1 kg m ⁻²		
266 } · } · } · }					Reserved
271					
272	Convective cloud cover	0 %	1 %		
273	Low cloud cover	0 %	1 %		
274	Medium cloud cover	0 %	1 %		
275	High cloud cover	0 %	1 %		
276	Cloud water	0 mm	1 mm		
277 } 278 } 279 }					Reserved
280					
281	Land-sea mask			0, 1	0 = sea, 1 = land
282					Reserved
283	Surface roughness	0 m	1 m		
284	Albedo	0 %	1 %		
285	Soil temperature	0°C	1°C		
286	Soil moisture content	0 mm	1 mm		
287	Vegetation	0 %	1 %		
288 } 289 } 290 }					Reserved
291 } 292 }					
293	Direction of ice drift	0°	10°		

Table 13 (ctd): International Codes by Type of Parameters

Code figure	Field parameter	Reference value	Unit	Occurrence and/or intensity of phenomenon	Remarks
294	Speed of ice drift	0 km/day	1 km/day		
295					Reserved
.					
.					
310					
311	Net short-wave radiation (surface)	0 joule	0.1 joule		
312	Net long-wave radiation (surface)	0 joule	0.1 joule		
313	Net short-wave radiation (top of atmosphere)	0 joule	0.1 joule		
314	Net long-wave radiation (top of atmosphere)	0 joule	0.1 joule		
315	Long-wave radiation	0 joule	0.1 joule		
316	Short-wave radiation	0 joule	0.1 joule		
317	Global radiation	0 joule	0.1 joule		
318					
319					Reserved
320					
321	Latent heat flux	0 joule	0.1 joule		
322	Sensible heat flux	0 joule	0.1 joule		
323	Boundary layer dissipation	0 joule	0.1 joule		
324					
325					Reserved
326					
327	Image data				
328					
.					Reserved for use by originating centre
.					
454					
455					
.					Reserved
.					
998					
999	<p>Reserved for totally fixed formats 999000 to 999999, for example:</p> <p>999001 TTddffTTddffTTddffTTddffhh</p> <p>TTddff = temperature, wind direction and wind speed for 400-hPa, 300-hPa, 250-hPa and 200-hPa levels</p> <p>hh = height of tropopause in 300-metre units</p> <p>Spaces between data groups omitted.</p> <p>Note: Code figures 999000 to 999999 for a₁a₁a₁, a₂a₂a₂ do not represent parameters. These code figures are used to indicate various standard formats in which the data content is given and which will be defined in an appropriate publication.</p>				Where applicable, the indication of all groups specifying the level of reference is to be omitted

Notes:

- (1) The code figures 000 to 327 are used to represent parameters which are exchanged between a number of centres; since the products generated by centres can be extremely diverse, code figures 328 to 454 are reserved for definition by the originating centre, and may differ from centre to centre.
- (2) Where it is necessary for a centre to redefine this table completely, a code figure nnn = 01–99 shall indicate the relevant redefined code table. The code figures a₁a₁a₁, a₂a₂a₂ shall then refer to the appropriate redefined code table.
- (3) The first part of Code table 0291 (code figures 000–099) shall be used without the inclusion in the report of the optional group 2nnnTa₁a₂. Parameters in the latter part of the code table (100–999) can only be used with the inclusion in the report of the optional group 2nnnTa₁a₂.

Source: World Meteorological Organization

Chapter Four

Concepts and Definitions

4 Distributive Trade and Services Industries

4.1 Distributive Trade:

Distributive Trade refers to wholesale and retail trade, which can be defined as an activity comprising purchase of goods and their disposal by way of sale without intermediate physical transformation of goods.

Trade Establishment

A trade establishment is an economic unit engaged in wholesale or retail trade of goods within the national territory under a single ownership or control, i.e. under a single legal entity at a single fixed location. In other words, a trade establishment is that establishment having three characteristics: economic activity (trading), legal status (registered one) and fixed location (housed in fixed structure).

Wholesale Trade

Wholesale trade is defined as the resale (sale without transformation) of new and used goods to retailers, business-to-business trade (for example, to industrial, commercial, institutional or professional users) or resale to other wholesalers, or it involves acting as an agent or broker in buying merchandise for, or selling merchandise to, such persons or companies.

Retail trade

Retail trade is defined as the resale (sale without transformation) of new and used goods mainly to the general public for personal or household consumption or utilization, by shops, department stores, stalls, e-commerce retailers, mail-order houses, hawkers and peddlers, consumer cooperatives, etc

Establishment

The establishment is defined as an enterprise or part of an enterprise that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added.

In other words, It is an economic unit which engages under a single ownership or control, in one or predominantly one kind of industrial/ business activity at a single location i.e an individual firm, workshop or shop.

Establishment name

This refers to the registered name of the business or the name under which the production unit does business. For a small unit, which does not have business name, the name of the owner or one of the partners will do. Names should be given in full.

Activity

Is the description of the main economic task being undertaken by an industrial/business establishment.

Main activity

Is the one among many activities which is most profitable for the business/organization OR The main or principal activity refers to the activity that contributes most to the value added of the entity, or the activity of which its value added exceeds that of any other activity of the entity.

Type of ownership

This is determined by the status of shareholders such as:

- i. Wholly private owned;
- ii. Wholly government owned;
- iii. Jointly government and private owned; and
- iv. Others not stated.

Persons engaged

These are persons taking part in the activity of the enterprise/business with or without agreed amount of payment. They could be family members, and apprentices. This category includes both contract and permanent workers.

Paid employees

These are persons who work for the establishment /enterprise to earn income. They sell their labour for wages or salaries.

Unpaid helpers

These are persons like members of religious institutions, prisoners, national service, militia, family members and the like who work for at least one third of the working time normal for the establishment. They work without regular pay or any agreed amount to be paid for the work done.

Working proprietors

These are active owners of the unit/ establishment who have worked for at least one third of the reference period. All working cooperative members should not be regarded as employees. They usually take no regular salary or wages, but earn all the profit resulting from their activity (partners share in whatever ways they have agreed upon).

Gross wages

This refers to cash payments made by the employer to the operatives in connection to the work done. This term includes bonuses, commissions, overtime, vocation pay, sick leave, maternity and casual leave payments.

Gross salaries

These refer to cash payments paid to other employees in connection with work done. This term includes bonuses, commissions, overtime, vocation pay, sick leave, maternity and casual leave payments.

Payments in kind

This refers to payments/ benefits given to employees in forms other than cash. It is the net cost to the employer of those goods and services (which are clearly and primarily of benefit to the employees as consumers) furnished to the employees free of charge or at markedly reduced cost. It includes food, beverages, tobacco, housing, clothing (not uniforms) and medical expenses. Excluded are recreational facilities.

Social security schemes

This includes contributions by the employer to the Social Security Fund such as National Security Fund (NSSF), Parastatal Pension Fund (PPF) and other funds of this nature organized by the establishment concerned.

Other payments beneficial to employees

This is the payment by the employer on accounts incurred by the employees such as medical bills, school fees, and telephone accounts and so on. If these are for the employees just because of their employment, they must be counted as part of their earnings.

Revenue

Revenue is a business term for the amount of money that a company/business receives from its activities in a given period, mostly from sales of products and/or services to customers.

Gross revenue: Gross revenue is the money generated by all of the company's operations, before deductions for expenses.

Sales

The exchange of goods or services for an amount of money or its equivalent; the act of selling. These include sales of bought goods for resale, sales of accommodation and sales of food and drinks.

Other operating income

This includes agency fees, commission receivable, rent receivable and other incomes.

Non-operating income: This includes interest receivable, share dividend receivable, subsidies and incentives from government and other non-operating incomes.

Purchases

Ownership of a security or other asset in exchange for money or value, which include purchase of goods for resale and for other purposes.

Purchase of goods for resale

To achieve its goals of making profits, a trading business buys goods to sell after adding some mark-up to cover costs and make the profit. Traders may buy and sell goods without changing them in any way; or they may merely unpack them from large bulky containers and sell them in small packets or small quantities.

Running expenses and other costs

These include costs for fuel used to run the business, vehicle registration and business license fees, depreciation, electricity, water charges, bank charges, interests, insurance, postage and telephone, advertisement, rents paid, repair, production tax and other costs of this nature.

Inventory

It includes opening stock and closing stock at the start and at the end of the reference period. It represents the value of trading goods held. Those values may change for the following reasons:

- i. The real level or quantity of goods has changed over time;
- ii. The type of goods carried has changed from low value goods to high value goods or vice versa; and
- iii. The prices of goods have changed a lot over the period.

Investment expenditure

This includes items of expenditure for the establishment e.g. cost of housing, other buildings, vehicles, machinery and other equipments and office equipments.

Additions

This is the value assigned to fixed assets acquired by the establishment during the reference period. It also includes all the costs actually incurred in their acquisition and installation.

Disposals

They are shipments or transfers of fixed assets as well as assets discarded. Disposals to others of capital equipment and their parts have been valued at price ex-establishment excluding discounts and direct taxes but including subsidies received.

4.2 Meteorological Services

Meteorology

Is the interdisciplinary scientific study of the atmosphere. The atmospheric science is used to describe the combination of meteorology and other branches of physical science that are involved in studying the atmosphere.

Meteorologist

Is a scientist who uses scientific principles to explain, understand, observe, or forecast the earth's atmospheric phenomena and/or how the atmosphere affects the earth and life on the planet. Meteorologists study and predict the weather and climate and its relationship on other environmental processes and the impact on our lives and economy.

Weather forecasting

Refers to application of science and technology to predict the state of the atmosphere for a given location. Weather forecasts are made by collecting quantitative data about the current state of the atmosphere at a given place and using scientific understanding of atmospheric processes to project how the atmosphere will change. Weather forecasting involves many people in many countries because the systems that bring weather are hundreds of miles in extent and move across huge regions of the earth's surface as they grow and change. The weather forecast that is broadcasted in the television screen is the end product of a worldwide effort by thousands of meteorologists in the national weather services of many nations.

Climate

Is defined as the measurement of the mean and variability of relevant quantities of certain variables (such as temperature, precipitation or wind) over a period of time, ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). Climate in a wider sense is the state, including a statistical description, of the climate system.

Climate system

Consists of five major components: atmosphere, hydrosphere, cryosphere, surface and biosphere. The climate system is continually changing due to the interactions between the components as well as external factors such as volcanic eruptions or solar variations and human-induced factors such as changes to the atmosphere and changes in land use.

Climate variability

Is the deviations of climatic statistics over a given period of time (e.g. a month, season or year) when compared to long-term statistics for the same calendar period. Climate variability is measured by these deviations, which are usually termed anomalies.

Climate change

Refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer).

Actual time of observation

- (1) In the case of a surface synoptic observation, the time at which the barometer is read.
- (2) In the case of upper-air observations, the time at which the balloon, parachute or rocket is actually released.

Alpine glow

Pink or yellow colouring assumed by mountain tops opposite the Sun when it is only just below the horizon before it rises and after it sets. This phenomenon vanishes after a brief interval of blue colouring, when the Earth's shadow reaches these summits.

Anomalous propagation

Propagation of radio energy in abnormal conditions of vertical distribution of refractive index, in association with abnormal distribution of atmospheric temperature and humidity. Use of the term is mainly confined to conditions in which abnormally large distances of propagation are attained.

Atmospheric – Sferic

Electromagnetic wave resulting from an electric discharge (lightning) in the atmosphere.

Automatic station

Meteorological station at which instruments make and transmit observations, the conversion to code form for international exchange being made either directly or at an editing station.

Aviation routine weather report

A statement of the observed meteorological conditions related to a specified time and location, issued on a routine basis for use in international air navigation.

BUFR – Binary universal form for the representation of meteorological data

BUFR is the name of a binary code for the exchange and storage of data.

BUFR message

A single complete BUFR entity.

Category

The lists of sequence descriptors tabulated in BUFR or CREX Table D are categorized according to their application; categories are provided for non-meteorological sequences, for various types of meteorological sequences, and for sequences which define reports, or major subsets of reports.

Class

A set of elements tabulated together in BUFR/CREX Table B.

Condensation trails (contrails)

Clouds which form in the wake of an aircraft when the atmosphere at flying level is sufficiently cold and humid.

Coordinate clas

Classes 0–9 inclusive in BUFR/CREX Table B define elements which assist in the definition of elements from subsequent classes; each of these classes is referred to as a coordinate class.

CREX – Character form for the representation and exchange of data

CREX is the name of a table-driven alphanumeric code for the exchange and storage of data.

Data description operator

Operators which define replication or the operations listed in BUFR or CREX Table C.

Data entity

A single data item.

Data subset

A set of data corresponding to the data description in a BUFR or CREX message; for observational data, a data subset usually corresponds to one observation.

Day darkness

Sky covered with clouds with very strong optical thickness (dark clouds) having a threatening appearance.

Descriptor

An entity entered within the Data description section to describe or define data; a descriptor may take the form of an element descriptor, a replication operator, an operator descriptor, or a sequence descriptor.

Dry thunderstorm

A thunderstorm without precipitation reaching the ground (distinct from a nearby thunderstorm with precipitation reaching the ground but not at the station at the time of observation).

Dust wall or sand wall

Front of a duststorm or sandstorm, having the appearance of a gigantic high wall which moves more or less rapidly.

Element descriptor

A descriptor containing a code figure reference to BUFR/CREX Table B; the referenced entry

defines an element, together with the units, scale factor, reference value and data width to be used to represent that element as data.

Equatorial regions

For the purpose of the analysis codes, the region between 30°N and 30°S latitudes.

Geometric altitude

Vertical distance (Z) of a level, a point or an object considered as a point, measured from mean sea level.

Geopotential

That potential with which the Earth's gravitational field is associated. It is equivalent to the potential energy of unit mass relative to a standard level (mean sea level by convention) and is numerically equal to the work which would be done against gravity in raising the unit mass from sea level to the level at which the mass is located.

Geopotential ϕ at geometric height z is given by

$$\phi = \int_0^z g dz$$

Where g is the acceleration of gravity.

Geopotential height

Height of a point in the atmosphere expressed in units (geopotential metres) proportional to the geopotential at that height. Geopotential height expressed in geopotential metres is approximately equal to $g/9.8$ times the geometric height expressed in (geometric) metres, g being the local acceleration of gravity.

Haboob

A strong wind and duststorm or sandstorm in the northern and central Sudan. Its average duration is three hours; the average maximum wind velocity is over 15 m s^{-1} . The dust or sand forms a dense whirling wall which may be 1 000 m high; it is often preceded by isolated dust whirls. Haboobs usually occur after a few days of rising temperature and falling pressure.

Ice crust (ice slick)

- 1) A type of snow crust; a layer of ice, thicker than a film crust, upon a snow surface. It is formed by the freezing of melt water or rain water which has flowed into it.
- 2) See *Ice rind*.

Ice rind

A thin but hard layer of sea ice, river ice or lake ice. Apparently this term is used in at least two ways:

- (a) For a new encrustation upon old ice; and
- (b) For a single layer of ice usually found in bays and fjords where fresh water freezes on top of slightly colder sea water.

Instrumental wave data

Data on measured characteristics relating to period and height of the wave motion of the sea surface.

Inversion (layer)

Atmospheric layer, horizontal or approximately so, in which the temperature increases with increasing height.

Isothermal layer

Atmospheric layer through which there is no change of temperature with height.

Jet stream

Flat tubular current of air, quasi-horizontal, whose axis is along a line of maximum speed and which is characterized not only by great speeds but also by strong transverse gradients of speed.

Line squall

Squall which occurs along a squall line.

Lithometeor

Meteor consisting of an ensemble of particles most of which are solid and non-aqueous. The particles are more or less suspended in the air, or lifted by the wind from the ground.

Mountain waves

Oscillatory motions of the atmosphere induced by flow over a mountain; such waves are formed over and to the lee of the mountain or mountain chain.

Normals

Period averages computed for over a uniform and relatively long period comprising at least three consecutive 10-year periods.

Obscured sky

Occasions of hydrometeors or lithometeors which are so dense as to make it impossible to tell whether there is cloud above or not.

Ocean weather station

A station aboard a suitably equipped and staffed ship that endeavours to remain at a fixed sea position and that makes and reports surface and upper-air observations and may also make and report subsurface observations.

Operator descriptor

A descriptor containing a code figure reference to BUFR or CREX Table C, together with data to be used as an operand.

Past weather

Predominant characteristic of weather, which had existed at the station during a given period of time.

Persistent condensation trail

Long-lived condensation trails which have spread to form clouds having the appearance of cirrus or patches of cirrocumulus or cirrostratus. It is sometimes impossible to distinguish such clouds from other cirrus, cirrocumulus or cirrostratus.

Present weather

Weather existing at the time of observation, or under certain conditions, during the hour preceding the time of observation.

Prevailing visibility

The greatest visibility value, observed in accordance with the definition of “visibility”, which is reached within at least half the horizon circle or within at least half of the surface of the aerodrome. These areas could comprise contiguous or non-contiguous sectors.

Note: This value may be assessed by human observation and/or instrumented systems. When instruments are installed, they are used to obtain the best estimate of the prevailing visibility.

Purple light

Glow with a hue varying between pink and red, which is to be seen in the direction of the Sun before it rises and after it sets and is about 3° to 6° below the horizon. It takes the form of a segment of a more or less large luminous disc which appears above the horizon.

Reference value

All data are represented within a BUFR or CREX message by positive integers; to enable negative values to be represented, suitable negative base values are specified as reference values. The true value is obtained by addition of the reference value and the data as represented.

Replication descriptor

A special descriptor is reserved to define the replication operation; it is used to enable a given number of subsequent descriptors to be replicated a given number of times.

Runway visual range

The range over which the pilot of an aircraft on the centre line of the runway can see the runway markings or the lights delineating the runway or identifying its centre line.

Sea station

An observing station situated at sea. Sea stations include ships, ocean weather stations and stations on fixed or drifting platforms (rigs, platforms, lightships and buoys)

Section

A logical subdivision of a BUFR or CREX message, to aid description and definition.

Sequence descriptor

A descriptor used as a code figure to reference a single entry in BUFR or CREX Table D; the referenced entry contains a list of descriptors to be substituted for the sequence descriptor.

Severe line squall

Severe squall which occurs along squall line (see *Line squall*).

Snow haze

A suspension in the air of numerous minute snow particles, considerably reducing the visibility at the Earth's surface (visibility in snow haze often decreases to 50 m). Snow haze is observed most frequently in Arctic regions, before or after a snowstorm.

Squall

Atmospheric phenomenon characterized by a very large variation of wind speed: it begins suddenly, has duration of the order of minutes and decreases rather suddenly in speed. It is often accompanied by a shower or thunderstorm.

Squall line

Fictitious moving line, sometimes of considerable extent, along which squall phenomena occur.

Sun pillar

Pillar of white light, which may or may not be continuous, which may be observed vertically above or below the Sun. Sun pillars are most frequently observed near sunrise or sunset; they may extend

to about 20° above the Sun, and generally end in a point. When a sun pillar appears together with a well-developed parhelic circle, a sun cross may appear at their intersection.

Synoptic hour

Hour, expressed in terms of UTC, at which, by international agreement, meteorological observations are made simultaneously throughout the globe.

Synoptic observation

A surface or upper-air observation made at standard time.

Synoptic surface observation

Synoptic observation, other than an upper-air observation, made by an observer or an automatic weather station on the Earth's surface.

Tropical (Tropic)

Pertaining to that region of the Earth's surface lying between the Tropic of Cancer and Tropic of Capricorn at 23°30'N and S, respectively.

Tropical cyclone

Cyclone of tropical origin of small diameter (some hundreds of kilometres) with minimum surface pressure in some cases less than 900 hPa, very violent winds and torrential rain; sometimes accompanied by thunderstorms. It usually contains a central region, known as the "eye" of the storm, with a diameter of the order of some tens of kilometres, and with light winds and more or less lightly clouded sky.

Tropical revolving storm

Tropical cyclone.

Tropopause

- (1) Upper limit of the troposphere. By convention, the "first tropopause" is defined as the lowest level at which the lapse rate decreases to 2°C km⁻¹ or less, provided also the average lapse rate between this level and all higher levels within 2 km does not exceed 2°C km⁻¹.
- (2) If, above the first tropopause, the average lapse rate between any level and all higher levels within 1 km exceeds 3°C km⁻¹, then a "second tropopause" is defined by the same criterion as under (1). This second tropopause may be either within or above the 1-km layer.

Twilight glow

See *Purple light*.

Twilight glow in the mountains (Alpenglühen)

See *Alpine glow*.

Unit of geopotential (Hm')

1 standard geopotential meters = 0.980 665 dynamic metre

$$Hm' = \frac{1}{9.80665} \int_0^z g(z) dz$$

Where $g(z)$ = of gravity, in $m\ s^{-2}$, as a function of geometric acceleration height;

Z = geometric height, in metres

Hm' = geopotential metres.

Vertical visibility

Maximum distance at which an observer can see and identify an object on the same vertical as himself, above or below.

Visibility (for aeronautical purposes)

Visibility for aeronautical purposes is the greater of:

- (a) The greatest distance at which a black object of suitable dimensions, situated near the ground, can be seen and recognized when observed against a bright background;
- (b) The greatest distance at which lights in the vicinity of 1000 candelas can be seen and identified against an unlit background.

Note: The two distances have different values in air of a given extinction coefficient, and the latter (b) varies with the background illumination. The former (a) is represented by the meteorological optical range (MOR).

Whiteout

Uniformly white appearance of the landscape when the ground is snow covered and the sky is uniformly covered with clouds. An atmospheric optical phenomenon of the polar regions in which the observer appears to be engulfed in a uniformly white glow. Neither shadows, horizon, nor clouds are discernible; sense of depth and orientation are lost; only very dark, nearby objects can be seen. Whiteout occurs over an unbroken snow cover and beneath a uniformly overcast sky, when, with the aid of the snowblink effect, the light from the sky is about equal to that from the snow surface. Blowing snow may be an additional cause. The phenomenon is experienced in the air as well as on the ground.

Wind (mean wind, spot wind)

Air motion relative to the Earth's surface. Unless it is otherwise specified, only the horizontal component is considered.

- (1) *Mean wind*: For the purpose of upper air reports from aircraft, mean wind is derived from the drift of the aircraft when flying from one fixed point to another or obtained by flying on a circuit around a fixed observed point and an immediate wind deduced from the drift of the aircraft.
- (2) *Spot wind*: For the purpose of upper-air reports from aircraft, the wind velocity, observed or predicted, for a specified location, height and time.

Zodiacal light

White or yellowish light which spreads out, in the night sky, more or less along the zodiac from the horizon on the side on which the Sun is hidden. It is observed when the sky is sufficiently dark and the atmosphere sufficiently clear.

National Bureau of Statistics

Vision

“To become a one-stop center for official statistics in Tanzania”

Mission

“To produce quality official statistics and services that meet needs of national and international stakeholders for evidence based planning and decision making”