Training Programs of WMO RTC in RF 2012

№	Theme of a Training Course	Table of Contents of a Training Course	Terms and Place of a Training Course
1. ESSENTIALS OF MANAGEMENT. HYDROMETEOROLOGICAL MANAGEMENT			
1.1	Specialized hydrometeorological support the economy and issues of quality customer service	Study of methods specialized hydrometeorological services industries. Status and trends of development of specialized Hydrometeorological. Normative and technical documents regulating the use of hydrometeorological information. Fundamentals of Marketing Technologies.	18.06-23.06 Zheleznodorozhny
2. HYDROMETEOROLOGICAL service of economical/social sphere			
2.1	Methods of hydrological forecasts. Provision of consumers with forecasting data. Generation of information resources of Roshydromet using the hydrologist-forecaster workstation	The organization of service of hydrometeorological forecasts. Modern methods of hydrological forecasting. Efficiency of hydrological forecasts. Calculation and forecasting of level river regime, other characteristics of water regime. Marketing in hydrological service. Formation of information resources of Roshydromet using the hydrologist-forecaster workstation.	23.01-04.02 Zheleznodorozhny
2.2	Methods of short-term, medium-term and long-term weather forecasting. Forecaster workstation	Learning of up-to-date technologies of super short-term, short-term, middle-term and long-term weather forecasting, including collection/processing of hydrometeorological data. Forecasts of nondangerous and dangerous hydrological events. Forms of representation of forecasts to users. Practice of work of NMHS on public weather service. Methods of real-time meteorological data use. Forecaster workstation of the GIS METEO system. Training at Hydrometeorological Center of Russia.	13.02-25.02 15.10-27.10 Zheleznodorozhny
2.3	Organization of aviation meteorological service	Guidance on aviation meteorological service, ICAO arranging/ methodical documents. Arrangement of AMC/AMCC activity. Technical facilities, requirements for supplying AMC/AMCC with technical facilities at airports. Workstation of KRAMS systems. Economic aspects of aviation meteorological service. Certification of airports. ICAO requirements for airports. Investigation of aviation incidents and preconditions to them	12.03-17.03 01.10-06.10 Zheleznodorozhny

2.4	Meteorological forecasting for aviation service	Studying of new methods of short-term and super short-term aviation weather forecasting. Forms of representation and terminology of aviation weather forecasts. Use of radar/satellite data when generating the aviation forecasts. The automated methods of processing of the aviation meteorological data, including the order, methods and systems of meteorological service of the international air navigation. Aviation climatology. Training at MAMC.	26.03-07.04 12.11-24.11 Zheleznodorozhny
2.5	Develop and implement a quality management system for aviation meteorological services **NEW!**	The study of the ISO series of standards to develop and implement a quality management system in the area of civil and aeronautical meteorological experimental aircraft, designed to enhance customer satisfaction promote safety	26.11-08.12 Zheleznodorozhny
2.6	Methods and facilities of agro meteorological observations. Methods of processing and control of agro meteorological data. Agro meteorological forecasting and service of f the users, concerned with agro-meteorological data.	Specialties of arranging the agrometeorological observations in modern conditions. The basic methods of agrometeorological observations and new means of measurement. Estimated methods of definition of agrometeorological parameters. Methods of monitoring. The program and methodology of inspection of stations/posts. Software on evaluation and transmitting of agrometeorological data. Agrometeorologist workstation. Agroclimatic processing of the results of observations. Studying of new and advanced methods of agro meteorological forecasts and interpretation of agrometeoro-logical data. Problems of arranging the agro-meteorological observations in new conditions of economy. Information provision of the system of agricultural insurance under state support. Features of organization a agrometeorological of supervision. Methods and ways of account a agrometeorological of constants. Methods of the control of humidity of ground. Technology of the automated control of humidity of ground. Development of the new program "Construction of maps of a degree of humidifying ".	09.04-21.04 Obninsk
2.7	Economic meteorology	Meaning and role of economical meteorology for the activity of organizations of Roshydromet. The review of the methods of estimation of the economical efficiency of hydrometeorological service. The estimation of the impact of weather factors on various kinds of economical activity. Practical work on economical meteorology.	15.10-20.10 Zheleznodorozhny

2.8	Information provision of the regional authorities with prediction and emergency data. The order of information cooperation between Organizations of Roshydromet with Ministry of Emergency Situations of Russia	The federal legislation in the field of protection of the population from emergency situations of natural character. «Storm» and «Tsunami» functioning subsystems of the Federal Service for Hydrometeorology and Environmental Monitoring. The dangerous hydro meteorological phenomena. The arrangement of information cooperation between the Federal Service for Hydrometeorology and Environmental Monitoring and Organizations of Ministry of Emergency Situation of Russia at federal and regional (local) level. The arrangement and order of HMS and ACBP. Information provision of the authorities of the regions and subjects of the Russian Federation with prediction and emergency data. The order of carrying out of inspection of zones (territories) of dangerous hydrometeorological phenomena. The order and rules of drawing up the documentation with the results of inspections.	11.04-16.04 Zheleznodorozhny
2.9	The specialized hydrometeorological maintenance of the enterprises and the organizations of oil branch	Strategic plans for development of oil branch. Marketing researches of requirements of the hydrometeorological information of the enterprises and the organizations of oil-and-gas branch. A condition of the specialized hydrometeorological maintenance of the enterprises and the organizations of branch. The normative and technical documents regulating use of the hydrometeorological information. The basic directions on development of new kinds of hydrometeorological production and development of address hydrometeorological service.	09.04-14.04 Zheleznodorozhny
3. THE SURFACE HYDROMETEOROLOGICAL NETWORK, METHODS, FACILITIES OF OBSERVATIONS, PROCESSING AND TRANSMITING OF THE HYDROMETEOROLOGICAL DATA. WEATHER MODIFICATION			
3.1	Processing and use of the satellite data at drawing up the hydro-meteorological forecasts	Study of modern and perspective technologies of processing and use of satellite data in real-time work. Use of space data at hydrometeorological provision of economical activity. Modern and perspective technologies of processing and use of meteorological satellite data in weather forecasts.	20.02-25.02 Zheleznodorozhny
3.2	Methods and means of control of the natural environment	Observation of radioactive conditions. Installation and operation of new technical means of measurement. The order of	14.05-19.05 Obninsk

	radioactive pollution	processing and summarizing the data and informing of consumers. The principle of construction, functioning and application of the Integrated Automated System of data collection on radiative conditions. Software on the analysis and data processing about radiative conditions, data analyzing. Normative bases, principles and organization of a network of supervision behind radioactive pollution of an environment. The gamma - spectrometer analysis, qualitative and quantitative definition radionuclids. The radiochemical analysis, technique of definition Pu - 238, 239. Definition of total alfa -activity of tests, alfa, beta-spectrometr	
3.3	Organization of activity of the state observation network and its functioning in modern conditions	Studying of requirements to the location of the posts of meteorological observations in view of changed requirements to meteorological data. Aspects of upgrading a network. Marketing in hydrometeorology. Requirements to hardware, methods of observations and data processing. Studying of methods and practices of management, inspection of a meteorological network. Normative-and-legal documents on the security of a hydrometeorological network. An industrial observation network. The requirement to licensing the observations and works. Observance of requirements on conducting the State Fund of the data on the environmental conditions. The inspector work organization. The automated technology of reception of the meteorological information, its gathering, the control, processing and accumulation.	02.04-14.04 St.-Petersburg
3.4	Modern objectives of monitoring of air pollution	Normative-and-legal base of carrying out the monitoring of air pollution. The condition of network monitoring of air pollution and atmospheric precipitation chemical composition. The arrangement of observations, analysis and estimation of air pollution over the territory of the Russian Federation. Development of technology of application of air pollution data and the chemical composition of deposits. Instruments and methods of the chemical analysis of air tests and metrological provision of methods of measurement. Innovation in measurement techniques of gas and aerosol impurities. Principles of estimated and hybrid monitoring	14.05-26.05 St.-Petersburg

		of air pollution. The forecast and real-time definition of zones of infection at technological failures. Methods of forecasting of the air pollution on a region, cities and inpidual areas of a city. Automation and processing of data on air pollution. Quality surveillance of the chemical analyses.	
3.5	Methods of the research of the ozone layer of the Earth. Instruments and methods of observation , data processing and analysis	The characteristic of ozone in nature and its meaning in the natural balance. The reasons of destruction of ozone and international efforts on its prevention. Current state of the ozone layer. Questions of the ozone layer monitoring, including space methods of receiving the data of the General Contents of Ozone. Ozonometric observations, observations for the General Contents of Ozone at the stations; modern techniques of observations for the General Contents of Ozone; bases of processing and analyzing of the data of the General Contents of Ozone; the equipment on manufacturing ozonometric observations; metrological principles of observations of the General Contents of Ozone; practical training.	18.06-30.06 St.-Petersburg
3.6	Hydrological estimation of the main characteristics of the regime of rivers and lakes at the points of hydrometeorological observations	Practical aspects of use and approbation of a new massive of the computing programs by definition of estimated meanings of an annual drain and its intra-annual distribution, peak discharges of spring high water and rain flood, summer and winter low-water discharges as well as the highest level of water of rivers and lakes and other hydrological characteristics. Consideration of a typical model of the territorial reference books/monographs. “Definition of the main estimated hydrological characteristics " (first edition).	18.06-30.06 St.-Petersburg
3.7	Automation of data collection control and processing of hydrological observations. System "RIVER - MODE"	Technology of the regime of hydrological data processing on a PC using “RIVER REGIME” system. The passport of a hydrological post. Preparation of the data of hydrological observations to be inserted into a PC. The syntactic and semantic control of hydrological observation data. Monthly processing of hydrological data. Archiving of data. Annual processing of hydrological data. Development and approach to the “RIVER-SROK”, “RIVER-SUTK” archives. Development of “RIVER-EDS” file. Compilation of the EDS tables. Graphic representation of hydrological observation data. Reception of the MDC tables. Use of real-time hydrological data.	17.09-22.09 Zheleznodorozhny

		Historical database of main hydrological characteristics. The automated updating of a database by the current hydrological observation data.	
3.8	Global and regional changes of climate. Methods of collection and processing of climate data. Use of KLIKOM and CLiWare system	Global and regional changes of climate. Methods of collection and processing of climate data. Use of KLIKOM automated system for preparation and provision of consumers with climate data. CLiWare automated system as a climate data management means. MeteoXML language. Database. Management. Input of hydrometeorological data to the system. Real-time data of meteorological observations. Constant data. Reception of climate characteristics. A sub-system of description of information resources. Realization of joint scientific/research work and development on studying climate and its changes, impact of these changes on social and economical development of regions within the framework of Cooperation Agreements in the field of hydrometeorology and environmental monitoring of territorial bodies and establishments of Roshydromet. Practical work on the preparation of climate monitoring bulletins and climatic reference books.	11.06-16.06 Zheleznodorozhny
3.9	The practical activity of metrological services in the territorial UGMS current conditions **NEW!**	Legal documents on organization of the metrological-ray services, subdivision Hydromet. Technical Issues-ray equipment metrological services, methods and means of verification parks SR. Working with mobile and stationary testing laboratories. The programmatic support of works by checking weather SR. Prospects for development of material and methodological basis of metrological services UGMS. Exchange of experience	11.04-18.04 St.-Petersburg
3.10	Automated means of primary processing and updating of information resources by the current agrometeorological information from stations/posts	Functions of the workstation of the agrometeorological observer. The general review of the automated means. Input of data to a PC from the logs of observations. Data processing and reception of the tables with agrometeorological data. Data processing and reception of real-time daily and decade telegrams. Processing and reception of moveable files for data accumulation and reception of the agrometeorological annual. Additional capabilities of the	10.09-15.09 Zheleznodorozhny

		agrometeorological observer workstation.	
3.11	The use of mobile equipment topogeodesic hydrological laboratory to perform work on the hydrological stations **NEW!**	Technical affairs hydrological. Bookmark reference frames. Co-tation of the project work. Checking the leveling. The paperwork. Pro-Proposition tacheometric course, the implementation of topographical Adjacent gayuschey-area hydrologic post. Performing observations GPS / GEONASS in the "Static" and "Kinematics", as well as in the mode of «RTK». The processing order «RTK» observations. Analysis of submissions received	14.05-26.05 St.-Petersburg
3.12	Monitoring of surface water pollution. Principles organizing theme in B monitoring methods and technical drugs but such devices	The order of the organization of monitoring of water objects: drawing up of passports of points of supervision; methodical maintenance of the analysis of waters and ground adjournment; intralaboratory and external quality assurance of measurements of parameters of structure of waters; calculations of background concentration and carrying out of polluting substances with a river drain; carrying out of procedural calculations with use of the advanced program «HydroChem PC»; methods of biotesting; remote monitoring. Training on methods of the analysis of waters and ground adjournment, algorithms of the control of an error.	29.09-06.10 Rostov-na-Donu
3.13	Organization of works on protection of the population and objects of economy from snow avalanches	The guidance documents on antiavalanche works. Methods and techniques of precautionary descent of snow avalanches. Modern methods of forecasting of avalanche danger. Bases of climbing, mountain ski technique and rescue works in mountains. Problems of arranging the antiavalanche service in new conditions of management. Training at the VHI.	01.10-13.10 Nalchik
3.14	Digital stations of reception and data processing of an artificial satellite of new generation: polarly - orbital series "METEOR -M", MetOp, geostationary "(ELEKTRO-L)"	Studying and practical development of technologies of reception and data processing of formats LRPT, LRIT and HRIT. Modern computer technologies and methods of processing of satellite images.	24.09-29.09 Zheleznodorozhny
3.15	Automated hydrological AGK. Metrological provision of hydrological measuring the level and	The study and practical development of technologies for receiving and processing data formats LRPT, LRIT and HRIT. Modern computer technology and methods of processing of satellite images	5 days St.-Petersburg

	flow rate **NEW!**		
3.16	Organizing and conducting appraisal of jobs on working conditions **NEW!**	The basic requirements for certification of employment. Certification as an important of instruments of industrial activity. The concept, scope, criteria, indicators and methods for assessing appraisal of jobs on working conditions. Procedure, the legal framework, the problem of improving the assessment. The use of evaluation appraisal of jobs on working conditions	12.05-17.05 Zheleznodorozhny
4. IMPROVEMENT OF PROFESSIONAL SKILL ON THE BASIS OF REMOTE TRAINING SYSTEM			
4.1	Aviation meteorology for meteorological technicians	The technical requirements to meteorological equipment at civil aviation stations of civil aircraft, meteorological observations, regular and special weather reports, international air meteorological codes METAR and SPECI, baric formations and atmospheric fronts, order of actions of shifts on duty in case of particularly dangerous phenomena. Coordination of actions between bodies of OVD and aviation meteorological services. Broadcasts ATIS and VOLMET. The automated measuring systems, sensors. Possible malfunctions and methods of their elimination. General questions of certification and licensing of aviation meteorological pisions.	April - May Meteorological Agency of Roshydromet
4.2	Large-scale and mezo-scale features of synoptical processes above Eurasia and their influence on the activity of aviation, Part 1 and 2	Energy of atmosphere. Principals of thermodynamics of atmosphere. General concepts about tropical fronts. Wave processes in atmosphere. Jet currents. Mezometeorological characteristics of low and medium troposphere. Use of geoinformation technologies in aviation weather forecasts. The normative and managing documents regulating meteorological observations and arrangement of meteorological provision.	September – November Meteorological Agency of Roshydromet
4.3	Modern marketing technologies of special hydro meteorological provision	Study of principles of marketing in the field of hydrometeorology. Objects of marketing researches. Study of the market of the hydrological and meteorological information. Positioning in the market. Marketing strategies of progress of information production on the market and marketing planning. Marketing technologies in modern hydrological and meteorological provision. Conjectural issues and prospects of its development.	14.03-19.05 Zheleznodorozhny
4.4	The use of satellite	Theory of satellite research. Satellite sensing of	As the acquisition

	information in the tasks of analysis and forecast weather (virtual satellite laboratory http://meteovlab. meteorf.ru)	mesoscale atmospheric-tems. The forecast rainfall from satellite imagery of cloud cover. Rated wind speed and direction for space information. Forecast synoptic situation by satellite images. The forecast of dangerous hydro-meteorological events on satellite data. Space Methods for the eco-logical monitoring	group
4.5	Meteorological Complex - (AMK / AMC)	Meteorological subsystem. Meteorological complex ISS (AMK / AMC). The appointment, composition, modification, completeness, key features, differences between AMK and the AMC. The basic equipment subsystems observations: the controller QML201, multiplexer QMU101, sensors, auxiliary engineering equipment. Grassroots communications subsystem. Subsystem power supply. Installation and commissioning of the complex. Periodic Servicing tion. Routine maintenance, rules and security measures	As the acquisition group
4.6	Actinometric complex - AAK	The structure of the complex actinometric MPAA. Composition, modifications, accessories. Standard equipment: controller QML201, multiplexer QMU101, sensors and vent protection system for tracking the sun, ancillary engineering actinometric equipment. Subsystem power supply. accident prevention	As the acquisition group
4.7	Aerological complex - ARVK	Block diagram of the complex: description of the device hardware ARVK. The device is an antenna system ARVK, radio-shelter probe simulation, control computer ARVK. Description of the software ARVK and "telegram". Installation and commissioning of the complex. Configuring the software ARVK. Periodic maintenance, preventive maintenance, safety	As the acquisition group