





# EC DG ENLARGEMENT / WMO Regional Programme on Disaster Risk Reduction in South East Europe

Activity 5: Training seminars and workshops

### Training workshop on calibration

Hosted by Environmental Agency of the Republic of Slovenia Regional Instrument Centre (RIC)

Ljubljana, 10 - 14 May 2010

#### **WORKSHOP PROGRAMME**

The WMO project on "Regional cooperation in South Eastern Europe for meteorological, hydrological and climate data management and exchange in support of disaster risk reduction" (DRR/SEE Project), financed by the Directorate General Enlargement of the European Commission, includes an activity on enhancing the capacity of the NMHSs of the Western Balkans countries for standardized calibration and maintenance of observational instruments. The main objective of the activity is to ensure sustainable quality of the meteorological and hydrological data produced and exchanged in the region.

The proposed capacity building activity is divided in two components: i) An assessment mission to each target country, and ii) a Training Workshop on Calibration at the Regional Instrument Centre, Slovenia. The Workshop is intended for NMHSs of the countries participating in the DRR/SEE Project.

Training workshop is proposed for two persons from each NMHS involved in the calibration and maintenance (preferably: a calibration laboratory manager and a technician). First two days are dedicated to quality assurance issues, last three days of workshop will be dedicated to practical work in laboratory. Managers are invited to be present during the first two days and technical personal will be present all five days of the workshop.

Participants in the practical part of the workshop will be divided into two groups:

 Group A: Participants with good knowledge of calibration methods (their national NMHSs have a calibration laboratory in their service). Practical work will be focused on calibration methods and uncertainty evaluation of precise electronic instruments for temperature, relative humidity and air pressure. 2. **Group B**: Participants with some knowledge of calibration methods (their NMHSs do not have a calibration laboratory in their service). Practical work will be focused on calibration of classical instruments for temperature, relative humidity and air pressure instruments. Calibration and use of travelling standards will also be described.

### **TENTATIVE PROGRAMME**

10<sup>th</sup> May Chairman:

Klemen Bergant Director of Meteorological Office and PR of Slovenia with WMO

09:00 - 09:15	Registration of participants	
09:15 - 09:30	Welcome address by the host	
	Silvo Žlebir, EARS Director General	
09:30 - 10:00	CIMO and CBS activities related to observations, calibration,traceability	
	Miroslav Ondras, WMO	
10:00 - 10:30	Argumentation on setting up of quality system	
	Georges Bernède, EUMETSAT	
10:30 – 11:00	EARS integral quality system	
	Silvo Žlebir, EARS Director General	
11:00 – 11:30	Coffee break	
11:30 – 12:00	Control of measurement equipment at EARS	
	Jože Knez, EARS Director of Hydrology and State of Environment Office	
12:00 – 12:30	Functionality of automatic measurement systems	
	Bojan Černač, EARS	
12:30 – 13:00	Introduction to information system of measurement network	
	Majda Spiller Tomažič, EARS	
13:00 – 14:00	Lunch break	

Chairman:

Drago Groselj Head of EARS Calibration laboratory

14:00 – 14:30	Regional Programme on Disaster Risk Reduction in South East Europe	
	Dimitar Ivanov, WMO	
14:30 – 15:00	Dissemination and traceability in measurements	
	Jovan Bojkovski, Laboratory for Metrology and Quality	
15:00 – 15:30	Coffee break	
15:30 – 16:00	Requirements of accreditation process of calibration laboratory	
	Jure Zupančič, Slovenian accreditation	
16:00 – 16:30	Experiences on accreditation and inter-laboratory comparison	
	measurements	
	Aleš Razpotnik, EARS	

11<sup>th</sup> May Chairman: Drago Groselj

Drago Groselj Head of EARS Calibration laboratory

00.00 00.20	On site intercomposition of management againment	
09:00 – 09:30	On-site intercomparison of measurement equipment	
	Luka Ravnik, EARS	
9:30 - 10:00	EARS Regional Instrument Centre	
	Drago Groselj, EARS	
10:00 – 10:30	Introduction to project "Upgrade of system for monitoring and analyzing water environment in Slovenia"	
	Jože Knez, EARS Director of Hydrology and State of Environment Office	
10:30 – 11:00	Presentation of participants (20 min each, cca. 10 slides): quality assurance, network, calibration laboratory	
11:00 – 11:30	Coffee break	
11:30 – 13:00	Presentation of participants (20 min each, cca. 10 slides): quality assurance, network, calibration laboratory	
13:00 – 14:00	Lunch break	
14:00 -14:30	Preparation of water triple point using liquid nitrogen (EARS Calibration laboratory) for standard platinum resistance thermometer calibration in fixed points.	
14:30 - 15:00	Visit of typical meteorological or hydrological site	
15:00 -17:00	Visit at Laboratory of Metrology and Quality (Slovenian holder of national standard for temperature and reference laboratory for relative humidity)  Jovan Bojkovski, Laboratory of Metrology and Quality	

# 12<sup>th</sup> May – Temperature

9:00 - 13:00	EARS calibration laboratory	
	<ul><li>Theoretical background of calibration of temperature instruments</li><li>Calibration of instruments - practical work in laboratories</li></ul>	
13:00 - 14:00	Lunch break	
14:00 - 17:00	Calibration of instruments - practical work in laboratory:	
	- Calibration of SPRT thermometer	
	- Calibration of PRT thermometer	
	- Calibration of LIG thermometer	
	- Calibration of thermograph	

## 13<sup>th</sup> May – Relative humidity

EARS calibration laboratory	
<ul><li>Theoretical background of calibration of relative humidity instruments</li><li>Calibration of instruments - practical work in laboratory</li></ul>	
Lunch break	
Calibration of instruments - practical work in laboratory:	
<ul><li>Calibration of capacitive hygrometers</li><li>Calibration of hygrograph</li></ul>	

### 14<sup>th</sup> May – Air pressure

9:00 - 13:00	EARS calibration laboratory	
	- Theoretical background of calibration of air pressure instruments	
	- Calibration of instruments - practical work in laboratory	
13:00 - 14:00	Lunch break	
14:00 - 17:00	Calibration of electronic barometers - practical work in laboratory	

### **CONTACT PERSON**

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