The Operational Oceanography of IOC VARNA-BULGARIA, 20-22 MARCH 2012

Institute of GeoSciences, Energy,
Water and Environment.
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# The Operational Oceanography, country report Albania.

ENG. Klodian Zaimi

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Albania is situated in the southwestern part of the Balkan Peninsula with a state territory of 28748 km2 and a population of about 3.5 million.
Albania is a typical coastal country having a total length of about 446 km coastline. We can distinguish Ionian Sea littoral, with a length of about 172 km, where the dominant is rocky high coast and the Adriatic Sea littoral , with a length of about 274 km , where on the contrary the dominant is low-land coast.

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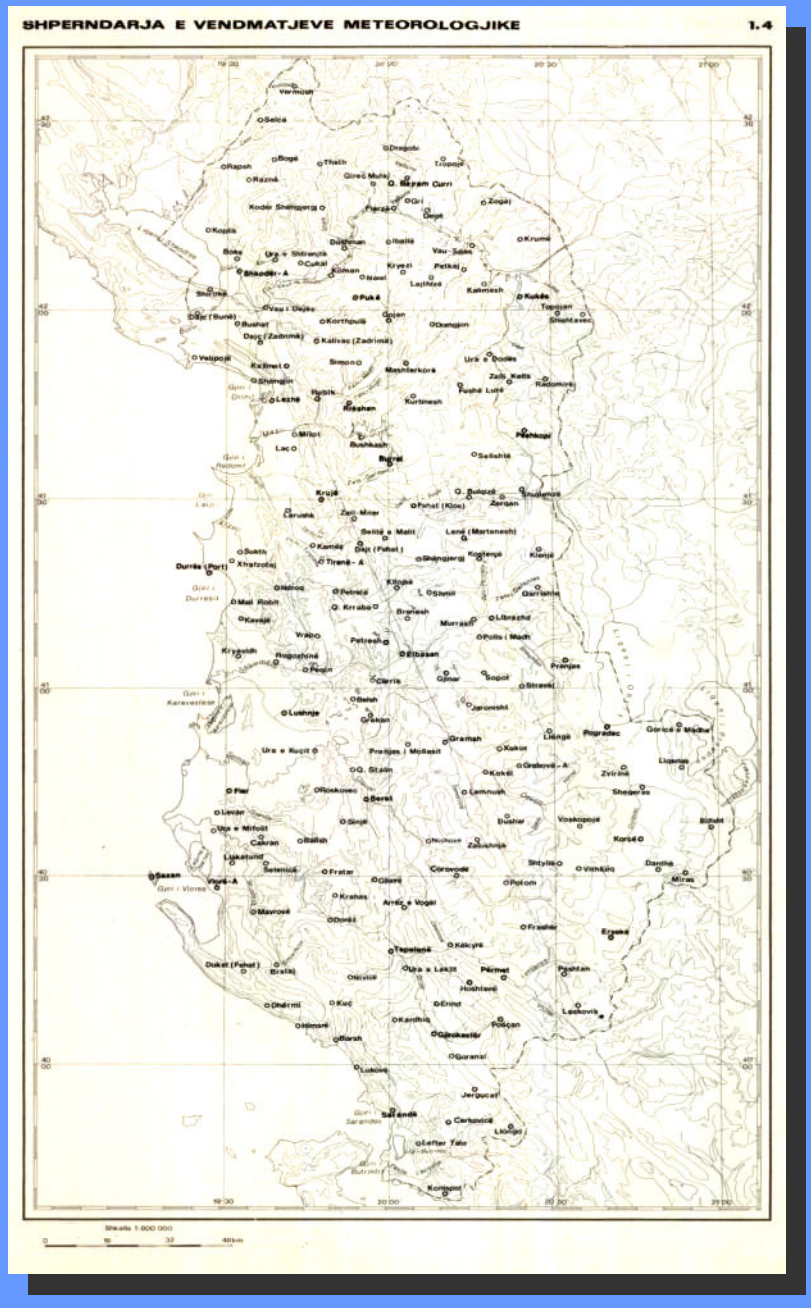
## Historical background of national ocean observation

Institute of Geosciences, Energy, Water and Environment is a national monitoring institution. Observations have begun in 1948. The Institute of Hydrometeorology of Albania was founded in 1962 under the Academy of Sciences, replacing the Hydro meteorological Service that had been created in 1949. The hydro meteorological network in Albania was composed from around 400 stations. After 1990 the number of the stations was reduced and the quality of all hydro meteorological activity has been affected.



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## Main National Oceanographic and Marine Data Centers

**1. Institute of Geosciences, Energy, Water and Environment (IGEWE),** under the Polytechnic University of Tirana. The main responsibilities of IGEWE not including recently the seismic institute are:

- Planning and supervision of the meteorological and hydrological observing systems.
- Collection, processing and management of all meteorological and hydrological data.
- Studies and reports on national, regional and basin scale on time-space
- Climatological and Hydrological characteristics and water resources assessment.
- Marine monitoring and researches
- Groundwater monitoring and researches
- Monitoring of air and water quality
- Hydro-meteorological forecasting
- Calibration of instruments
- Data dissemination and exchange.

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## Main National Oceanographic and Marine Data Centers

**2. Center of Researches on Fishery (CRF)**, under the Ministry of Economy.
The main responsibilities of CRF are:
•Studies and reports on national and regional scale on time-space distribution of Sea species.
Currently: 26 employees

**3. Hydrographic Service of Navy (HSN),** Under the Ministry of Defense.
The main responsibilities of CRF are:
•Installation and maintenance of hydrographic buoys for navigation purposes
•Collection and processing of data on plankton, fishes and other sea species.
•Bathymetric surveys in the coastal zone and different activities for the purposes of the Navy.

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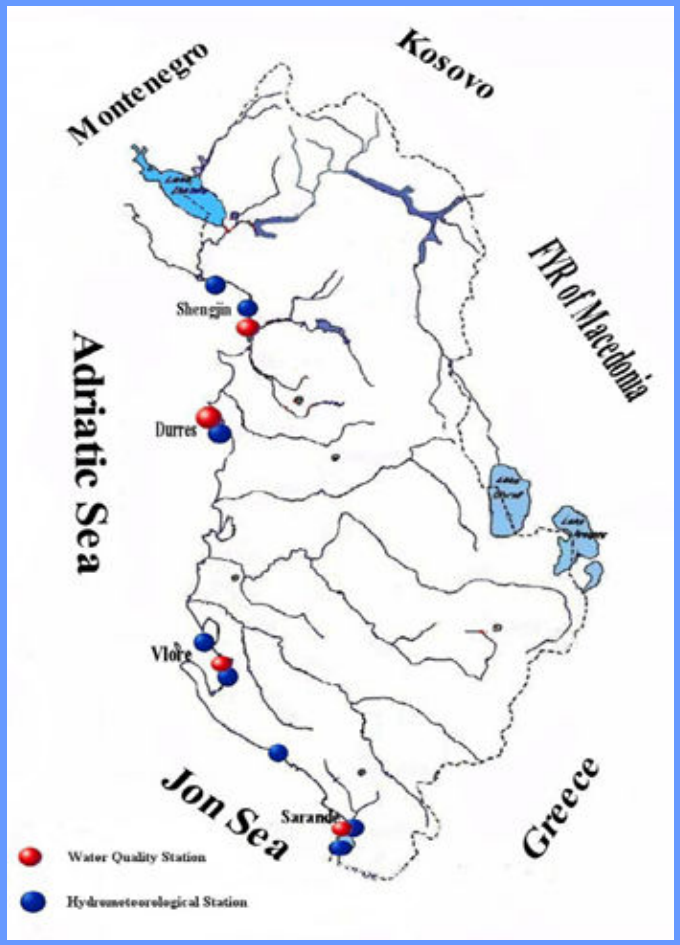
## Overview on national system for ocean observation

A section of marine researches is dealing with marine monitoring and researches in the coastal zone.

Concerning the monitoring network, currently there are 10 hydro meteorological stations in the coastal zone of the Adriatic and Ionian Sea, from which 6 stations in the coast and 4 stations in lagoons where the tide parameters, wind, water temperature and some chemical elements are measured. Currently, only one automatic station exist.

There are also about 25 meteorological stations in the vicinity of the coastal line where meteorological elements are measured.



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## Overview on national system for ocean observation

The ocean observation studies consists of four principal stations: Saranda, Vlora, Durres and Shengjin.

In past monitoring in Albanian coastal area is related more for ports and coastal infrastructure. Some important elements like the maximum sea level, maximum wave, wave dominant directions, currents, astronomic tide, relation between wind and wave ore other elements have used the Russian methodologies .

Recently we are focus more in erosion of the coastline and monitoring of the sediment transport in the lowest part of Albania.

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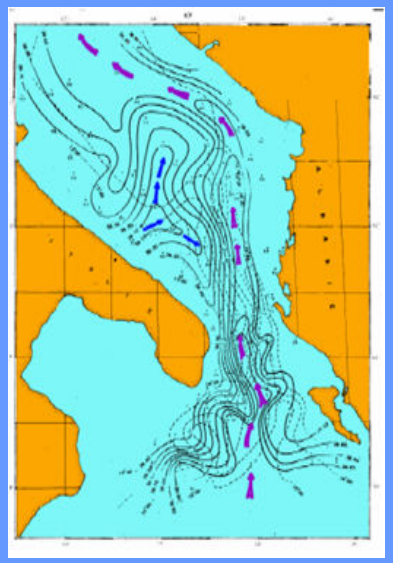
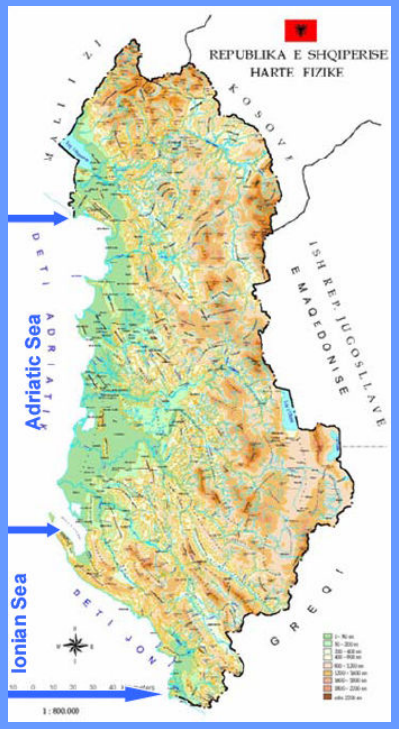
## Overview on national system for ocean observation



Monitoring of atmospheric processes based on observing, collecting, transmitting and evaluating of meteorological elements.

Monitoring of water resources (ground waters, marine waters), maritime hydrology -tide and their respective parameters, waves level, hydro geomorphology, coastal lagoons, monitoring of pollution in surface, ground and marine waters, study of tendency in water quality parameters. Monitoring of the coastline erosion and sea water intrusion in the fresh water aquifers.

There are 4 maritime stations for water quality.



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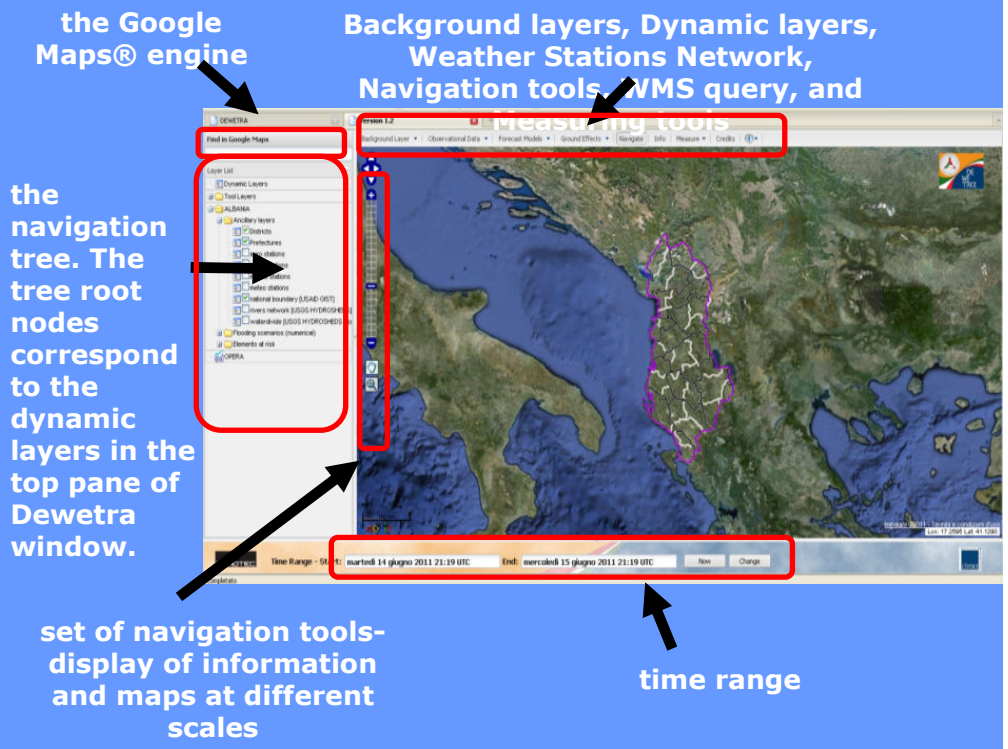
## Overview on national system for ocean observation

In the IGEWE there is also a section dealing with short-term weather forecasting up to 72 hours. The numerical model used is the Cosmo Lami 7 Km resolution for the limited area. Web based WebGIS application to ensure distribution of information. The system has been designed by CIMA Research Foundation on behalf of Italian Civil Protection. The Albanian version is currently running at IGEWE. Forecast up to 10 days from ECMWF are also received from this dissemination system. Every day we send bulletins for meteorological alarms to the different institutions and related ministry's. Currently, inside this platform it does exist, either in regional or in national scale, any service of marine forecasting.

**DEWETRA**
**main components**



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## Projects participations and financing of the monitoring program.

Founds for monitoring program have been a problem in this last decade so mainly we are financed from the state budget. The last decade, the Department of Hydrology has participated in several projects financed by the EC or local organizations related with oceanography. Following, it is a list of the main projects:

:"MED-POLL - The pollution of the Mediterranean sea", financed by EC. The main objective of the project was to establish a monitoring network supported by all Mediterranean countries in order to collect data on seawater quality and especially on the pollution of water by the industry, agriculture, urban areas etc.

"MED-HYCOS - Mediterranean Observation System of the Hydrological Cycle", financed by WB through WMO and co-ordinate by Pilot Regional Centre in Montpellier. The main objective of the program is the implementation of an information system on water in the Mediterranean region.

"Natural Resources of Albania", financed by the Albanian Government. The main objective of the project in the field of hydrology is the assessment of national water resources and the definition of a framework for integrated and sustainable water management.

INTERREG, financed from EC. In the framework of INTERREG II, between Institute of Hydrometeorology of Albania and University of Bari - Italy, during 2001, is worked in the project entitled “A marine monitoring network in the southern part of Adriatic Sea” In the framework of INTERREG III a project proposal is prepared from the Institute of Hydrometeorology of Albania and University of Bari – Italy entitled: “Protection and Management of Environment – Management Monitoring and Protection of Coastal Zones”.

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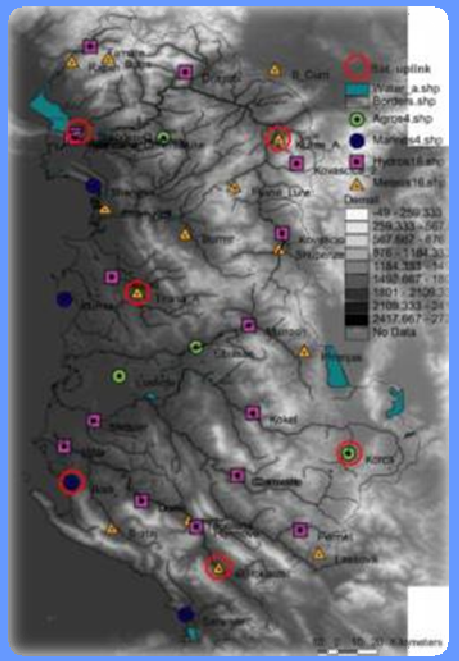
# World bank Project. Disaster Risk Mitigation and Adaptation in Albania



In the World bank Project. Disaster Risk Mitigation and Adaptation in Albania are 4 new maritime station to be installed after some months. Below there are some hydro meteorological elements that will be measured in real time from this stations.

Sea level every 10 min (average), min/max values for every 1 h.
Atmospheric pressure every 1 hour (average) .
Wind direction every 10 minutes .
Wind speed every 10 minutes, maximum values every 1 h speed.
Air temperature average, minimum and maximum values every 1 h .
Air humidity average, minimum and maximum values every 1 h .
Water Temperature. Average, minimum and maximum values every 1 h.
Wave parameters like periods, length, maximum level and direction.

| *N.* | *Location* | *Elevation (m a.s.l.)* | *Latitude (deg, min)* | *Longitude (deg, min)* |
|---|---|---|---|---|
| 1 | Shengjin | 10 | 41 49 | 19 35 |
| 2 | Durres | 10 | 41 18 | 19 27 |
| 3 | Vlore (S) | 10 | 40 28 | 19 29 |
| 4 | Sarande | 10 | 39 52 | 20 00 |

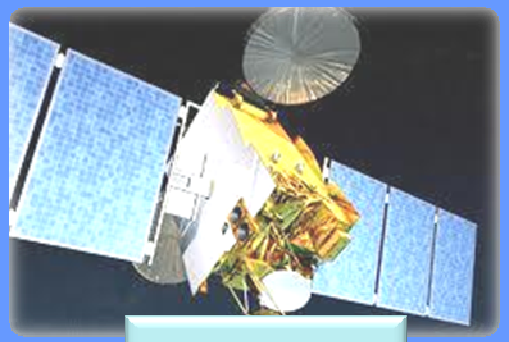
**Station on Durres Bay**

# System Architecture

GTS

Network

Satellite Radio



GPRS

Eumetcast

IEGEWE

Real Time Database

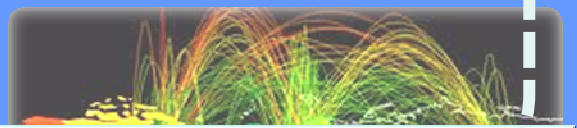
HydroMet Analaysis WKStations

Historical Archive

Meteo Message Swithcing and Web Server

Satellite Dowlink

FTP



Internet

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# Future perspectives for operational oceanography

Albania recently is financing some project from World Bank and EU countries because in order with the obligations that we have as a partner country with EU, we have one part that is the sea and ocean monitoring program.

This obligation has to implement until the year 2015 even some additional plans that include all coastal areas. Very important is for our country participation in regional projects.

Coastal environments, settlements, and infrastructure are exposed to land-sourced and marine hazards such as storms associated waves and storm surges, river flooding, shoreline erosion, and influx of biohazards such as algal blooms and pollutants. All of these factors need to be recognized in assessing climate-change impacts in the coastal zone.

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# Future perspectives for operational oceanography

In order to undertake actions, a clear starting point is knowledge of the complex phenomena which typify the coastal dynamics of the area. This knowledge could derive from the extension of the monitoring program, creation of an extensive temporal and spatial database, which takes into account mainly the coast, but also the rivers and the open sea.

Consequently, improvement of the network of monitoring and data dissemination for the Albanian coastal area remains a problem of great importance with the solution of which will pass in a next phase, that of marine forecasts.

A network with such standards would increase the degree of integration with the EC countries and will facilitate obtaining technical and financial assistance for the realization of the marine forecasts, preceding effects of climate change, particularly sea level rise, changes in frequency of storms, increased coastal erosion and sea flooding.

# *Thank You For your Attention*