

5th Drin Stakeholders Conference

**FLOODS IN DRIN-BUNA , THEIR OCCURRENCE
EFFECTS AND RISKS**

Author of the presentation (Klodian ZAIMI / IGEWE)

21 – 22 November 2017
Podgorica

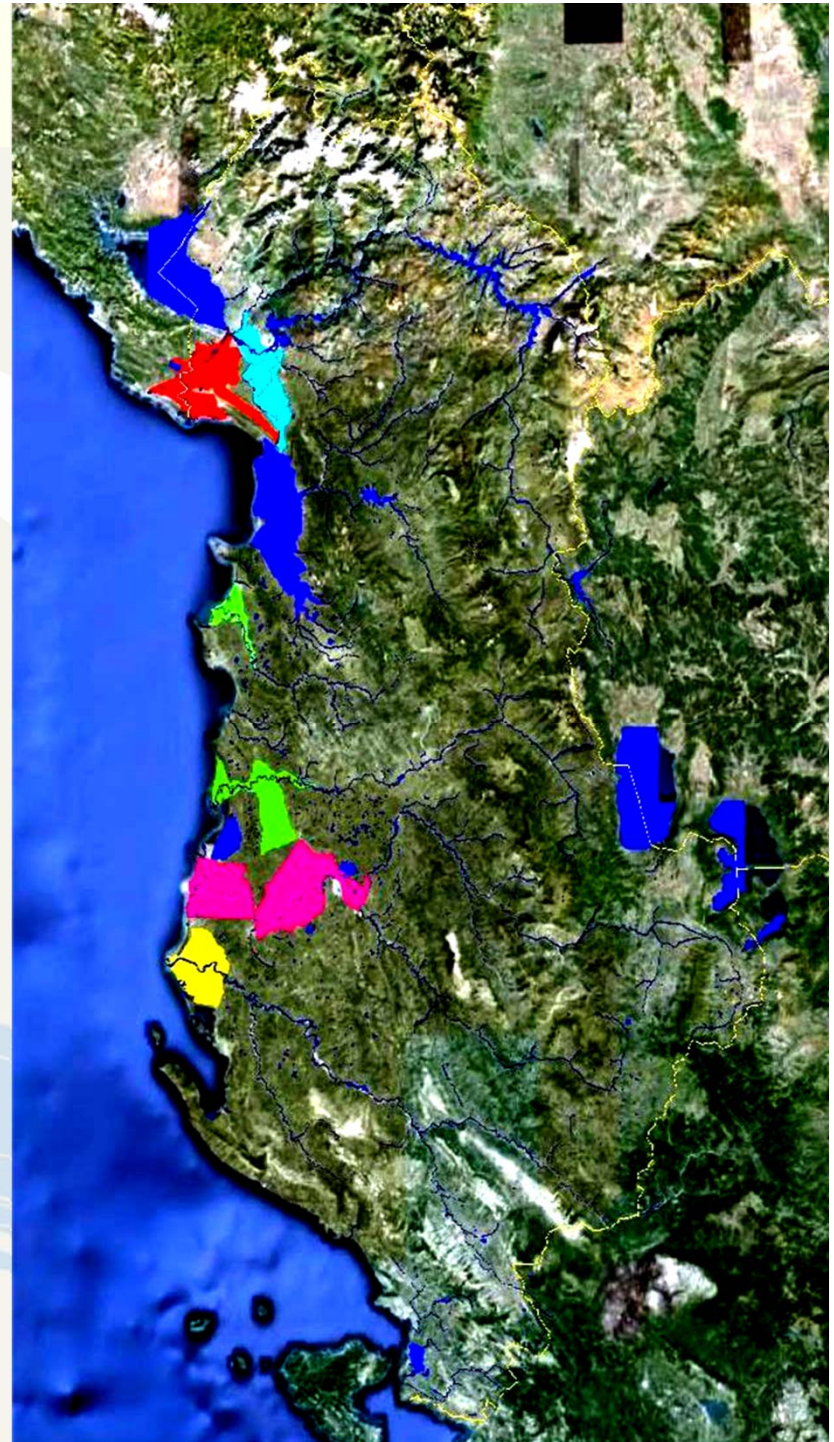
- In Albania, the rivers constitute the highest flood risk, whose effects extended to 130 000 hectares of land.
- The floods are generally of pluvial origin and are occurring in the period of November – March, when the country receives about 80-85 % of annual precipitations.
- The largest floods have appeared in the low western area of the country but small rivers and the torrents cause Flash Flooding too.

As a consequence, the rivers in defined segments cause high economic damages for the inhabited rural ore urban areas.



Floods from Albanian Rivers based on the year 1963

As the urban development of the floodplain increased, the damage caused by flooding also increased. The conception of the flood-protection measures has been derived from an analysis of floods in the area of these rivers since 1962-1963. After the flood of these years, protection structures were constructed in some rivers. These structures were constructed with an average return period of 1%.



Historical Floods from Buna River

In January and December 2010 the flood caused major damage and disruption over a wide area. The flooding of January 2010 in the district of Shkodra was at the time considered the biggest emergency event. Some 10,400 ha of land was inundated and about 2500 houses and 4800 people were evacuated.

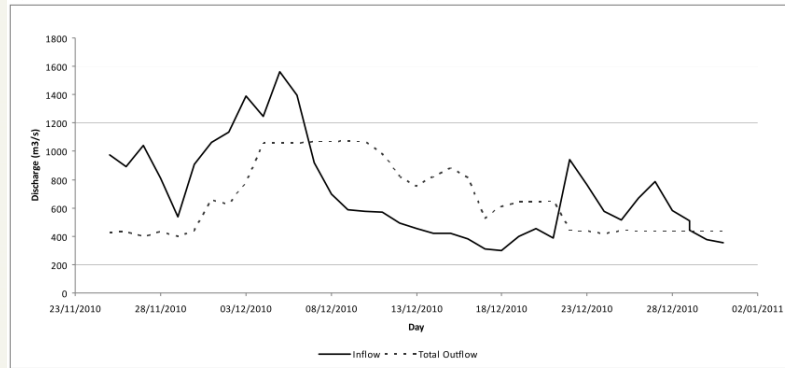
- As a result of increasing rainfall, the Drin river flow rapidly raised and augmented the water level in three hydropower reservoirs.
- After being forced to release water, the discharge increased to 2450 cubic metres per second while the maximum capacity of Buna River is only 1600 cubic metres per second.
- The Albanian government declared the flood a "natural disaster" on January 5th 2010 when the flooding displaced thousands of people. The Shkoder District reached a critical situation as the water level on main roads reached one meter. Inside the village of Berdices the water level reached two meters. The overflow of water alienated the city from national road access and cut communication with the town.
- The Albanian government used the army and police forces to help remove residents using boats and military vehicles. The Emergency Commission at Shkodër on January 8th 2010 reported an increase in the number of evacuations to 3,572 persons with 98% being accommodated by relatives.



Drin deviation to Buna River

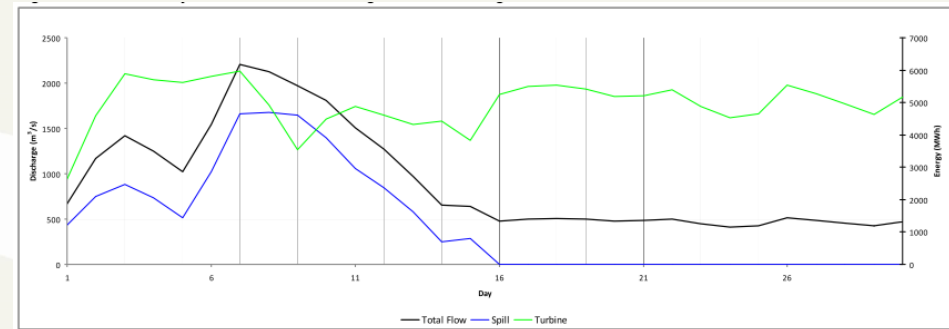


The Inflow and Outflow for Fierza Reservoir during December 2010



Source: KESH

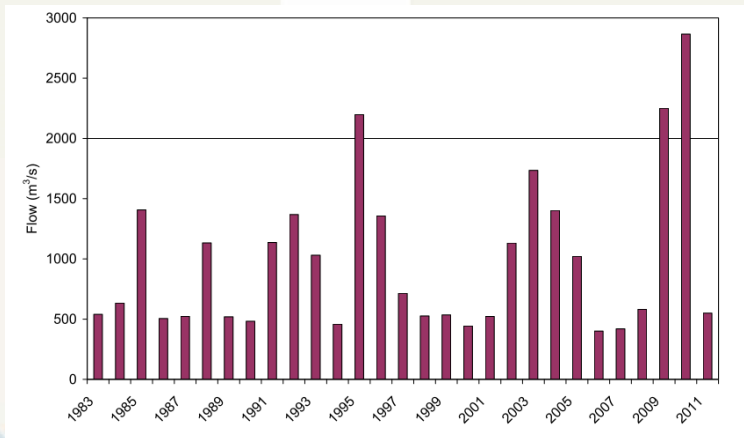
Vau Dejes Outflow and Power generation during December 2010



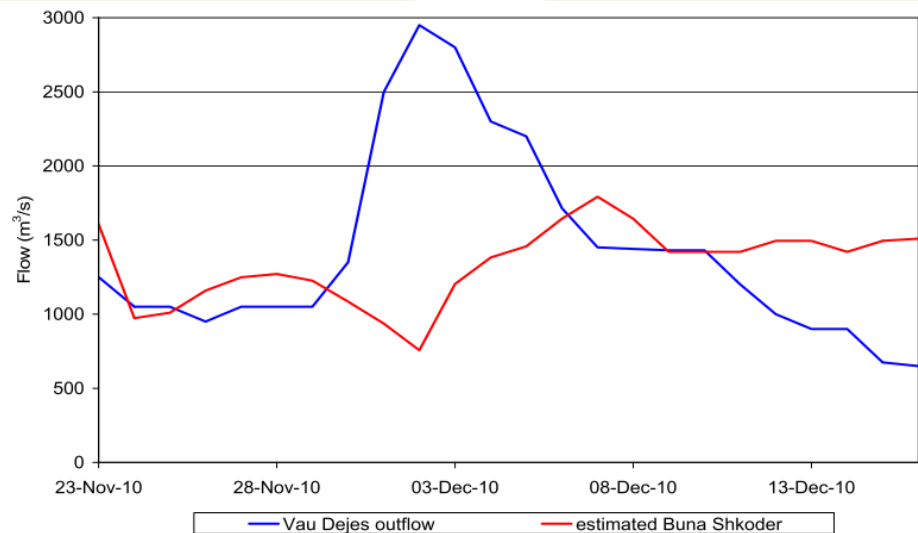
Source: KESH

(Source: Mott MacDonald)

Annual Maximum Flows from Vau Dejes Reservoir



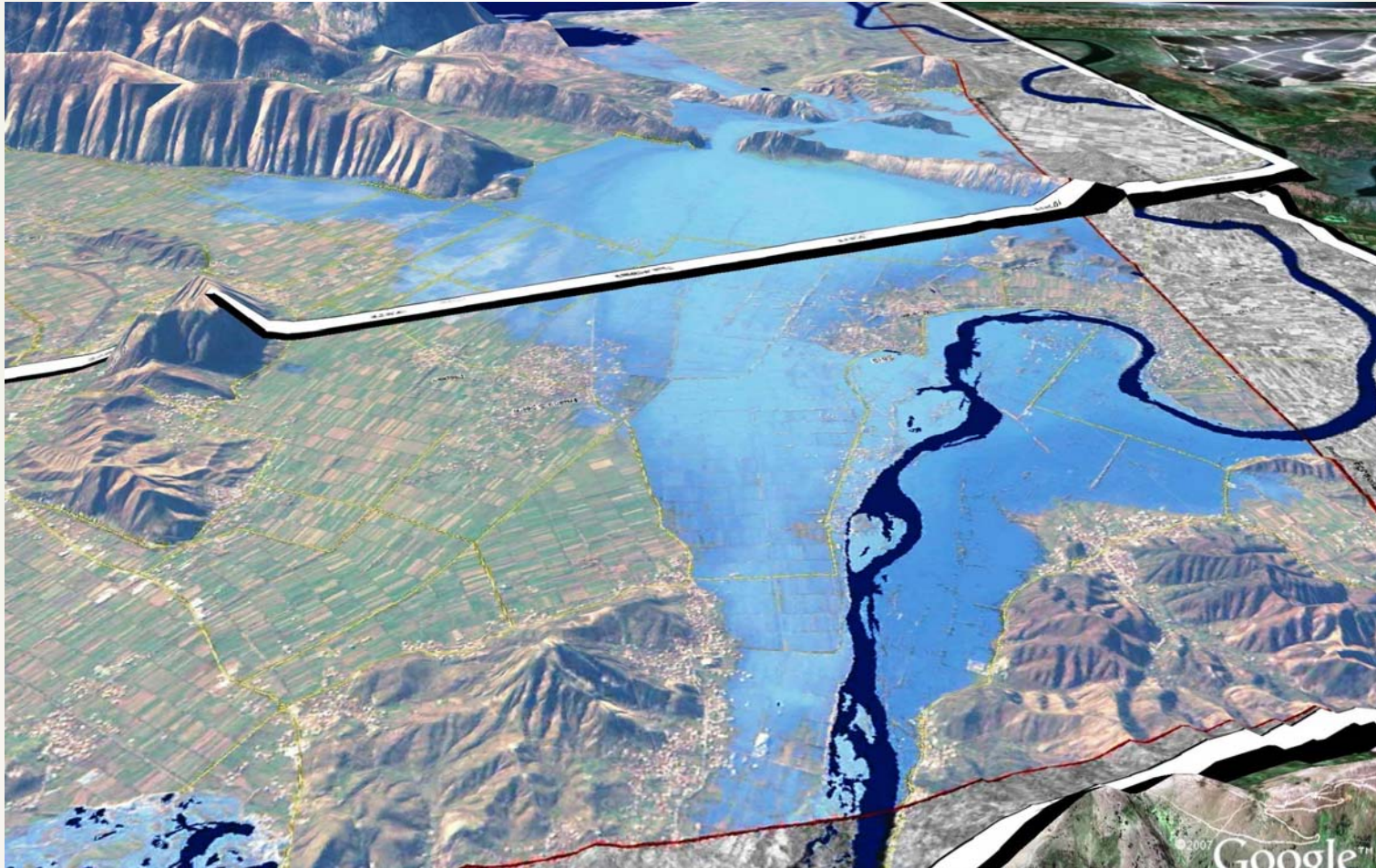
Drini and Buna Flows in the December 2010 Flood Event



Discharge for Drini and Buna Rivers and its tributaries Kiri and Gjadri

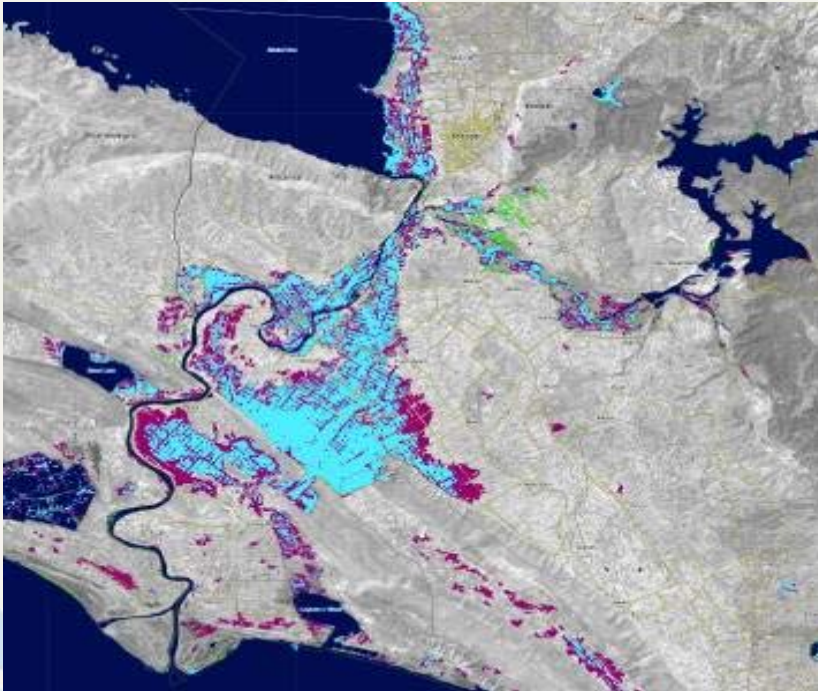


Flood on December 2010





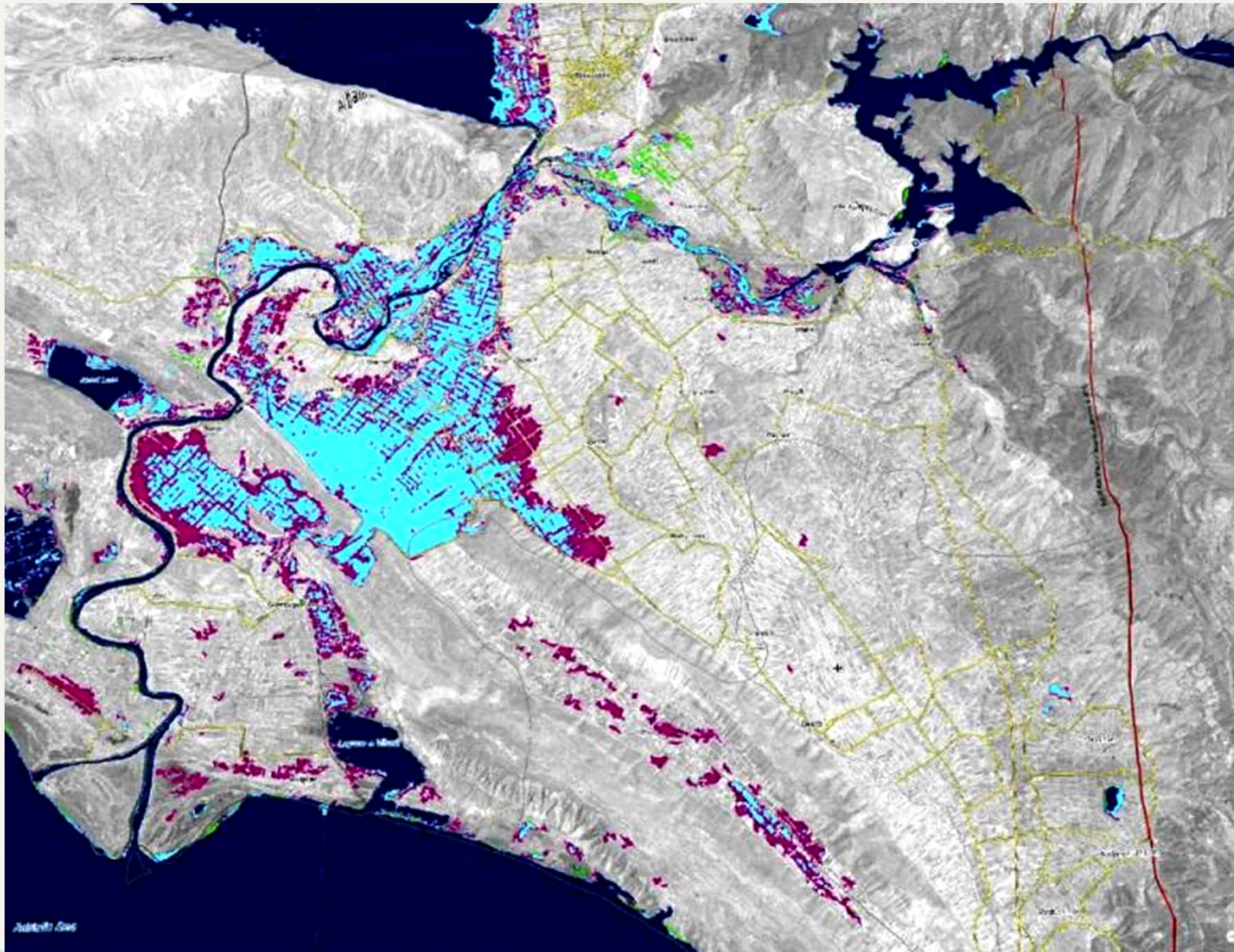
Floods problems 2010



Flood of January 2010



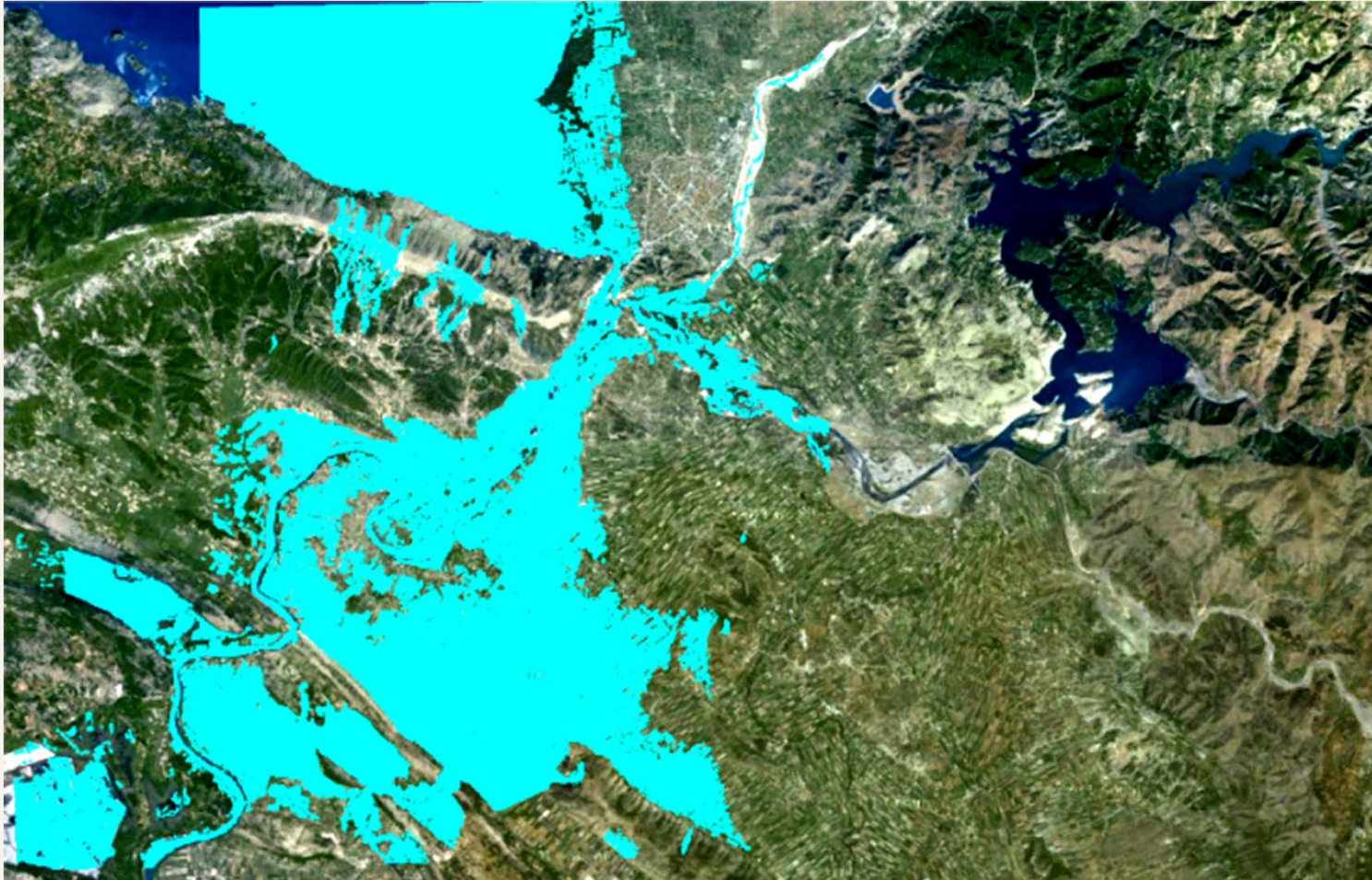
Flood of January 2010



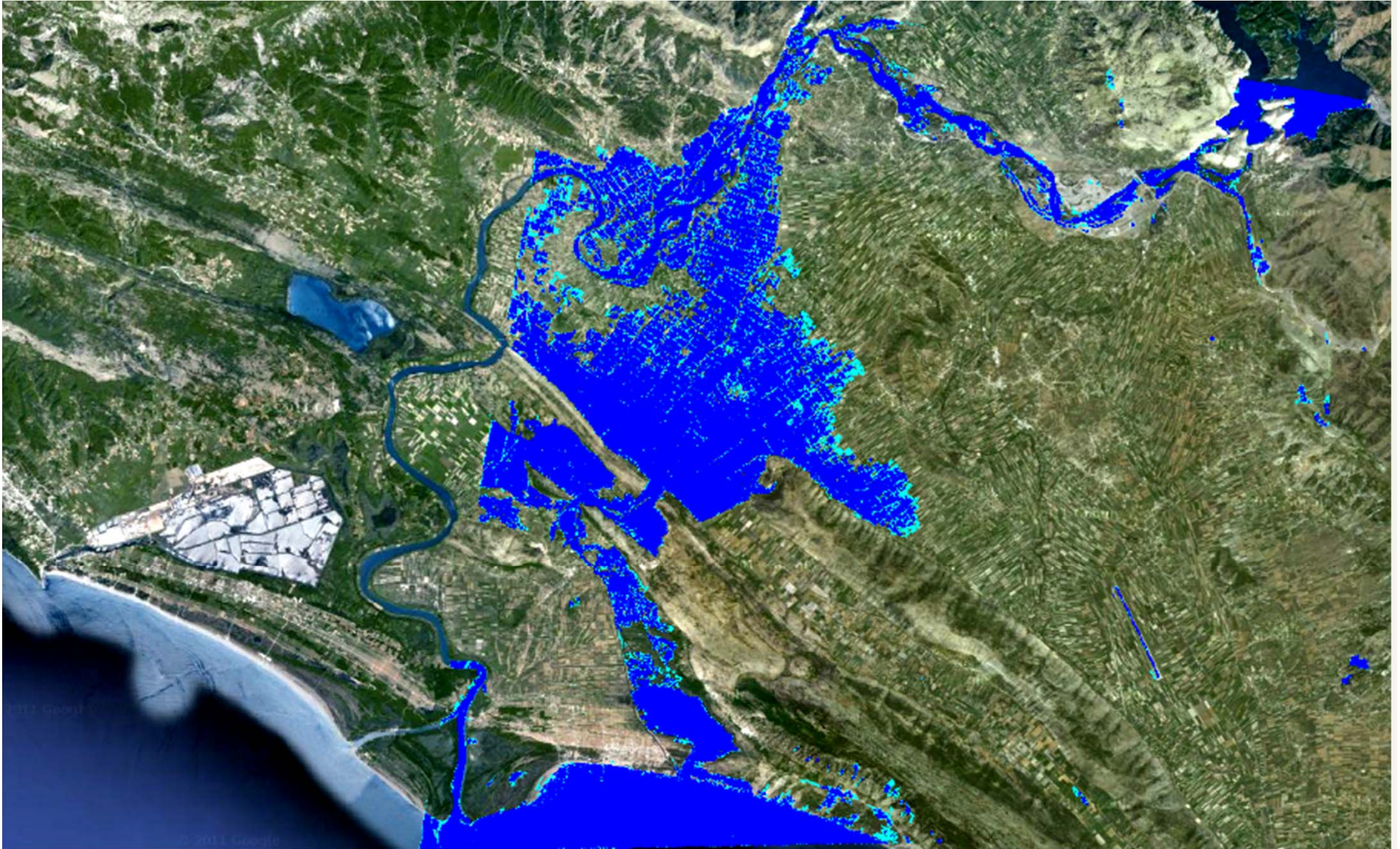
Flood of December 06.12.2010



Flood of December 08.12.2010



Flood of December 12.12.2010



•The frequency of natural hazards, such as floods, drought and forest fires have been increasing during the last decades. On the other hand modern societies have become more vulnerable to impacts of natural hazards, which has increased the economic impacts of weather extremes.

•Through climate modelling it is predicted that the climate variability and the frequency and magnitude of hydrometeorological extremes and hazards will further increase due to climate change.

•The IGJEUM is responsible to manage the national meteorological and hydrological networks, to provide studies about climate and hydrology, water and air quality in Albania. Some measures necessary for flood protection are:

1.Organizing flood warning service, through reactivation) of a network at IGJEUM, which will regularly inform the state authorities on rainfall and the condition of rivers in flood cases.

2.Undertake a comprehensive study on data including the years 2000-2017.

3.Review of existing regulation and discharge computerization through a simulation models.

4.Determination of high-risk areas and flood damage caused by floods of different sizes.

5.Organize periodic sensitization campaigns for flood damages and awareness for the population in collaboration with Directorate of civil protection and related ministry's.

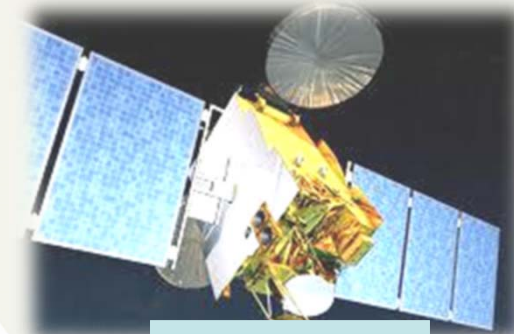
GTS

Network



Satellite Radio

GPRS



Eumetcast

IEGEWE

Real Time Database

Historical Archive

HydroMet Analysis WKStations

Meteo Message Switching and Web Server

Satellite Dowlink

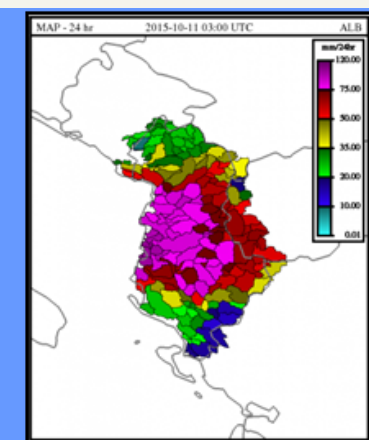
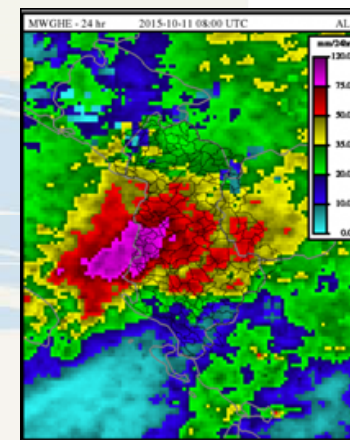
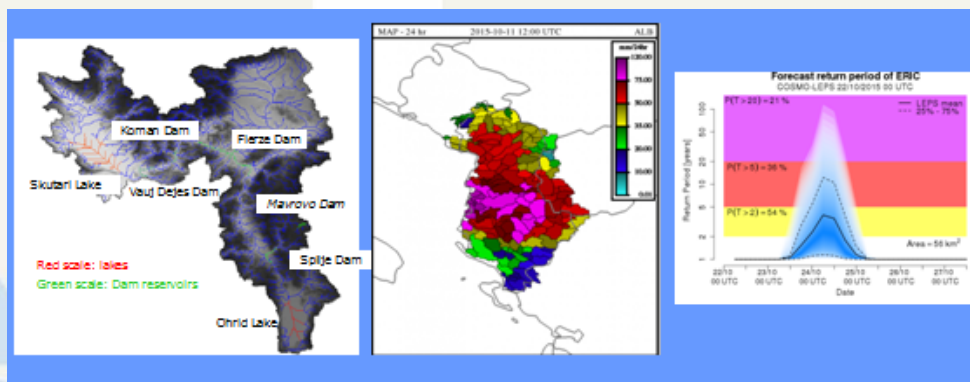
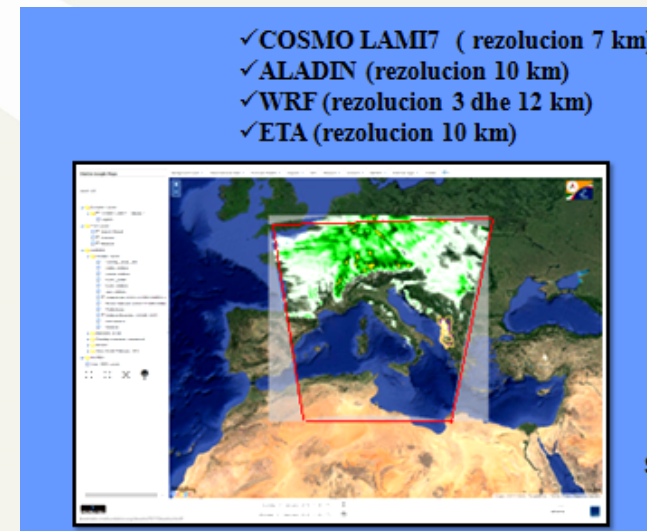
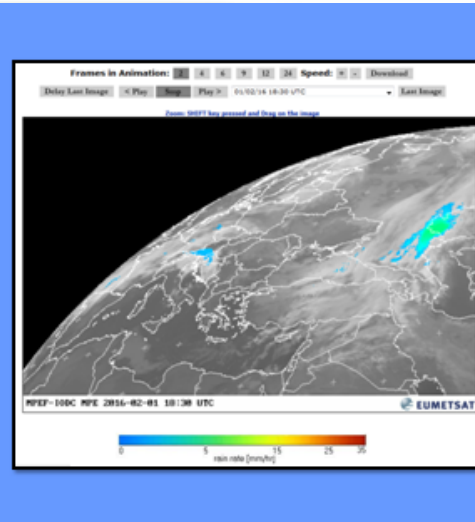
FTP

Internet

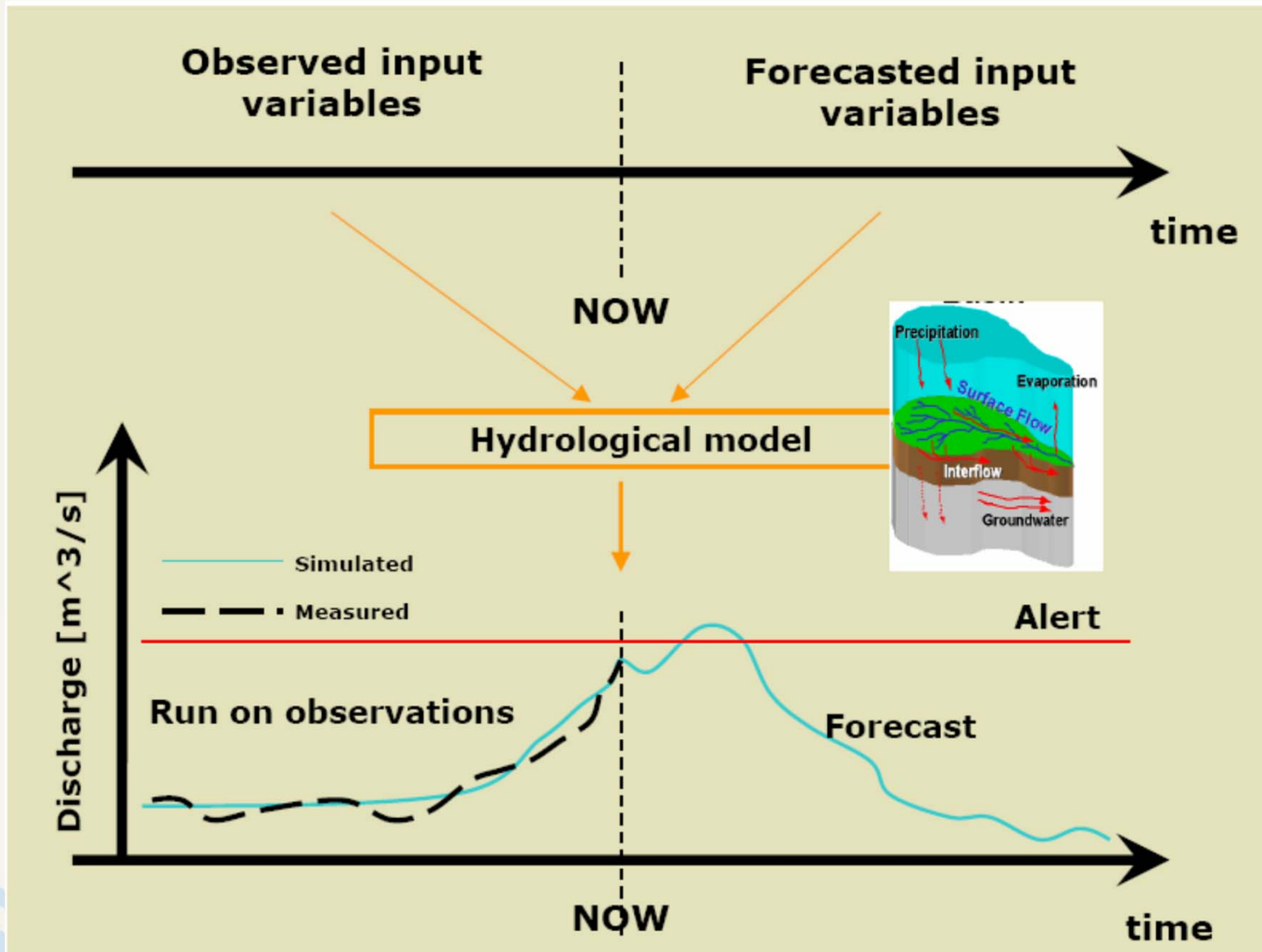


Done:

- The hydrological model has been adapted to the Drin-Buna catchments system.
- **Flood-PROOFS**,
- **PANTA RHEI (GIZ)**,
- **EFAS**
- **Flash Flood Guidance System (WMO)**



Flood forecasting



Bulletins on HydroMeteorological Events

BULETINI MBI
Bulletin

Qendra Kombëtare për Parashikimin dhe Monitorimin e Rreziqeve Natyrore
Facebook page : [Instituti i Gjeoshkencave](#)

Buletini Nr. 64 / 2016, 23-03-2016 I vlefshëm nga: 23-03-2016, ora 12:00 deri më 24-03-2016, ora 23:59.

Për rreziqe të tjera meteorologjike

Qarku	Ngjarje meteorologjike	
	Reshje	Rrufe
Lezhë	mesatare lokalisht, intensive	⚡
Durrës	mesatare	⚡
Tiranë	mesatare lokalisht, intensive	⚡
Elbasan	mesatare lokalisht, sh. intensive	⚡
Fier	mesatare	⚡
Berat	mesatare lokalisht, intensive	⚡
Korçë	mesatare lokalisht, sh. intensive	⚡
Vlorë	intensive lokalisht, sh. intensive	⚡
Gjirokastrë	mesatare lokalisht, sh. intensive	⚡

BULETINI MBI RREZIQET NATYRORE
Bulletin on Natural Hazards

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Facebook page : [Instituti i Gjeoshkencave, Energjisë, Ujit dhe Mjedisit, IGIEUM: www.geo.edu.al](#)

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Për rreziqe të tjera meteorologjike ON-LINE, klikoni në: www.atmosfera.al

PARASHIKIMI METEO.

RESHJET
Sot (dt.23): gjatë pjesës së dytë të ditës priten reshje intensive deri shumë intensive, më rrufe dhe ndonjë breshër të izoluar.

Nesër (dt.24): priten reshje të tjera shumë intensive, më të mundshme rrufe dhe ndonjë breshër të izoluar.

Në zonat malore do të ketë edhe reshje intensive.

Pasnesër (dt.25): priten reshje, POI dhe ndonjë breshër të izoluar.

ERA : sot dhe nesër ajo do të vazhdojë me shpejtësi (për momente, mbi 40-50 km/orë)

PËRMBYTTJE apo KRËSHQITJE
Nuk priten ndonjë rrezik.

BULETINI VIJON

Instituti i Gjeoshkencave, Energjisë, Ujit dhe Mjedisit

Operator: Metodi Marku Supervisor: Klodian Zaimi

PËRMBLEDHËSE

BULETIN ON NATURAL HAZARDS
National Center for the Prediction and Monitoring of Natural Hazards
Facebook page : [Institute of GeoSciences, Energy, Water and Environment, Webpage: www.geo.edu.al](#)

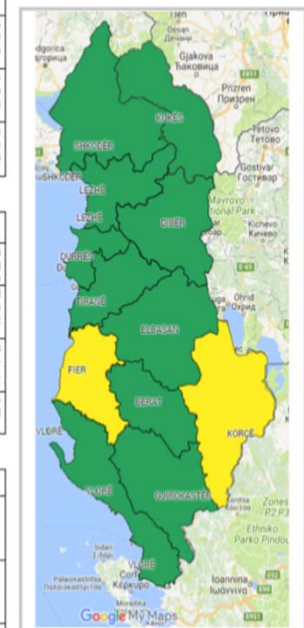
Buletini Nr. 216 / 2017, 03-11-2017 Bulletin : from 03-11-2017, 12:00 h to 04-11-2017, 23:59 h

LEGEND 1: Meteorological Risks

Type of Risk	Description
NO RISK	Low precipitation from 0 to 15 mm in 24 hours is forecast (0-15mm/24h). No severe meteorological events are expected.
LOW RISK	Average precipitation from 15 to 45 mm in 24 hours is forecast (15-45mm/24h). Low probability of severe meteorological events is expected.
MODERATE RISK	Intense precipitation from 45 to 90 mm in 24 hours is forecast (45-90mm/24h). Moderate probability of severe meteorological events is expected.
HIGH RISK	Very intense precipitation higher than 90mm in 24 hours is forecast (>90mm/24h). High probability of severe meteorological events is expected.

LEGEND 2: Hydrological Risks

Type of Risk	Symbol	Description
Thunderstorms	⚡	high intensity rainfall 20 mm/3 hours which can create problems depending on the type of landcover and soil type
Flash floods	🌊	fast occurring floods in small catchments or streams or urban areas. The event will last less than 12 hours
River floods	🌊	slow occurring floods in big rivers such as Drini, Buna, Mati, Ishëm, Erzen, Shkumbin, Seman and Vjosa. The event will last more than one day
Surface landslide susceptibility	⚠️	surface terrain slope movement only related to rainfall intensity and duration



Highest Risk in Prefectures for today and tomorrow, day. 03 - 04

LEGEND 3: Forest Fires Risk

Type of Risk	Description
NO RISK	very low probability of fire ignition. The possible fires are easily controllable, and fire spread velocity is low. In forest areas with dried covered floor fire spread velocity can be medium.
LOW RISK	low probability of fire ignition. The possible fires are controllable however fire spread velocity can be medium in all areas. In forest areas with dried covered floor fire spread velocity can be high.
MODERATE RISK	medium probability of fire ignition. The possible fires are difficult to control, and fire spread velocity can be high in all areas. In forest areas with dried floor and crown fire spread velocity can be very high.
HIGH RISK	high probability of fire ignition. The possible fires are very difficult to control, and fire spread velocity can be very high in all areas. In forest areas with dried floor and crown fire spread velocity can be extreme.

Institute of GeoSciences, Energy, Water and Environment – IGIEUM

Forecaster: Anira Gjoni Supervisor: Klodian Zaimi (Tel: +355 4 2259540, albania.hazards@gmail.com) page 3 / 3

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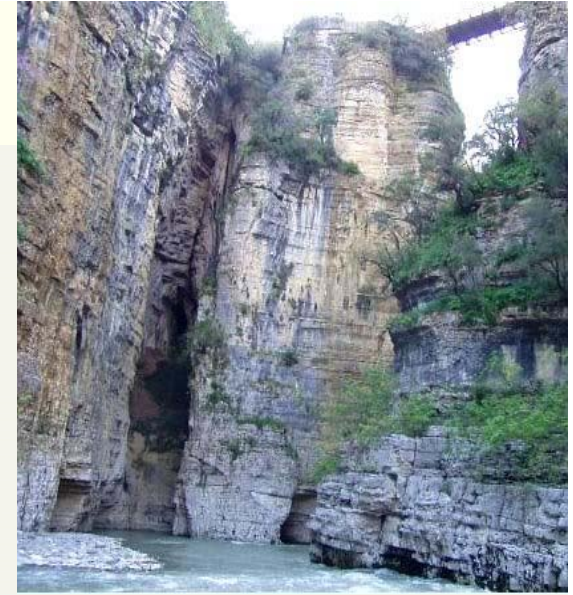
Floods In Drin and Buna Rivers, March 2013.

Foto LSA



Foto LSA





**Thank
you
for your
attention!**

