"Copernicus data and services for floods and fires damage assessment"

“Данни и услуги по програмата Коперник, за оценка на поражения от наводнения и пожари”

Rosen Nazarov
Sofia, 2018
AeroSpace Monitoring Center (SMC)
Established in 2007

Purpose and Tasks:

- Receives, process and analyzes Real-time Satellite and variety of ground data
- Informs and warns Civil protection authorities
- Participates in the process of Disaster Risk Management
- National Representative Copernicus Committee
- National Representative GNSS Agency Security Accreditation Board
- Function in 2007/2/EO (INSPIRE) – the Ministry of Interior part
- Contact Point for EMS Activations
Aerospace Monitoring Center Equipment

- Two Receiving ground stations
- Small datacenter
- Specialized SW revealing different phenomena (Cloud, Rain, Fires...)
- GIS system for analyzes and publishing
Aerospace Monitoring Center - Interaction

- SMC
- NIMH BAS
- GA Anti Hail
- Air Force Met Center
- Registered WEB users
- NOC Fire Safety and CP
Copernicus EMS Activation

EMSN-022    Bulgaria
Event Time: 2014-07-31
Activation Time: 2016-05-04
Area: Mizia town, Bulgaria

Issued by the Institute for the Protection and Security of the Citizen, Ispra, ITALY, 76 pages Report

- Post-disaster analysis,
- Damage assessment,
- Recovery and rehabilitation planning and monitoring,
- Flood risk assessment,
- Disaster preparedness and response mechanisms

AEROSPACE MONITORING CENTER
MINISTRY OF INTERIOR
Flood Date - March 11
Reference Date - Feb 28
Date after - March 12

Fast Mapping Process:
- Calibration, Ch-Sigma0
- Speckle filtering
- Terrain Correction
- Masking
- Random Forest Classification
- Output the Mask to GIS

Sentinel 1 GRD – Bregovo Region, Timok river Flood
GIS Analysis products for Civil Protection Authorities

GIS Calculations on CORINE
Kresna Fires – August 2017 – Situation chart and damages

Карта на ситуациата към 27.08.2017 г. - 12:28 ч. Част I

Оценка на щетите към 27.08.2017 г. - 12:28 ч.
Sentinel 2 Ch. 4,3,2 – Bregovo Region, Flood on March 11th

Ref. Date - March 10th                            Date after – March 13th
Sentinel 2, NDWI – Bregovo Region, Flood on March 11th

Ref. Date - March 10th                            Date after – March 13th

0.5          0         +0.5

AEROSPACE MONITORING CENTER                MINISTRY OF INTERIOR

Water
Sentinel 1 - Deeper Classification

5 Classes
- Sowings
- Forest
- Plowed land
- Water
- Urbanization

Sentinel 2, March 13th, CH432
Sentinel 1, March 12th, RGB
Conclusion and Future

Free Copernicus services cause rapid development

Ocean of data

- Automation of procedures up to alerts
- Idea for a centralized BG hub with preprocessed data.
- Improved interaction between BG EMS authorities