



INFORMAL CONFERENCE OF SOUTH-EAST EUROPE DIRECTORS

Hosted by Republic
Hydrometeorological
Service of
Republic of Srpska,
Bosnia and Herzegovina



Installation of meteorological radars in the Republic of Srpska and establishment of analysis and now casting center



Public Company Hail Prevention, Republic of Srpska





Project installation two meteorological radars

Awareness and mission

- Due to climate change extreme weather events will happen more often
- Need adequate quick response
- Many sectors can improve their results or reduce losses
- To accomplish this goal need to know accurate weather condition at every point and at every time
- Use direct measurement and atmospheric remote sensing (radar and satellite data) together with advanced methods and nowcasting technique

Project installation two meteorological radars

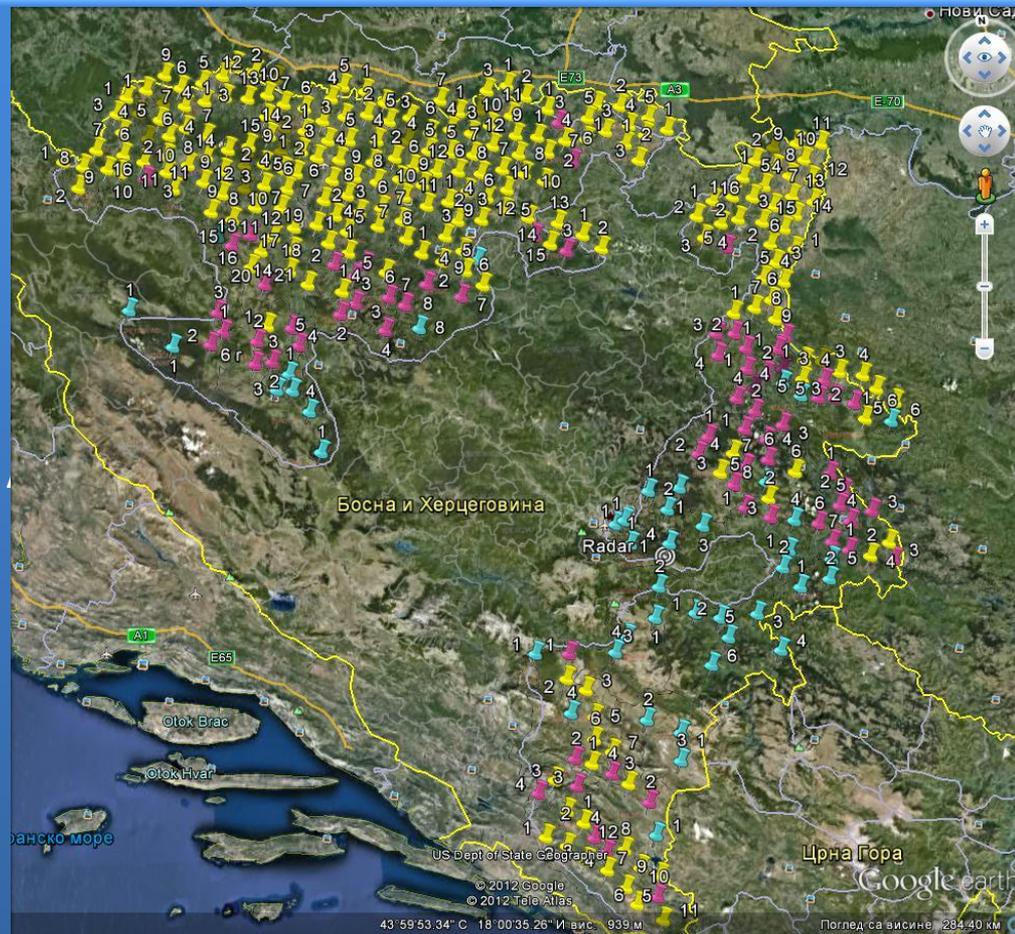
Radar network in RS

OBSERVATION NETWORK:



Two the most advance dual-polarized Doppler weather radars will be installed at Borja and Jahorina and will cover the territory of the Republic of Srpska and the parts of the neighboring countries

Automatic weather station with ground based generator and rocket launcher



AWS with rocket launcher

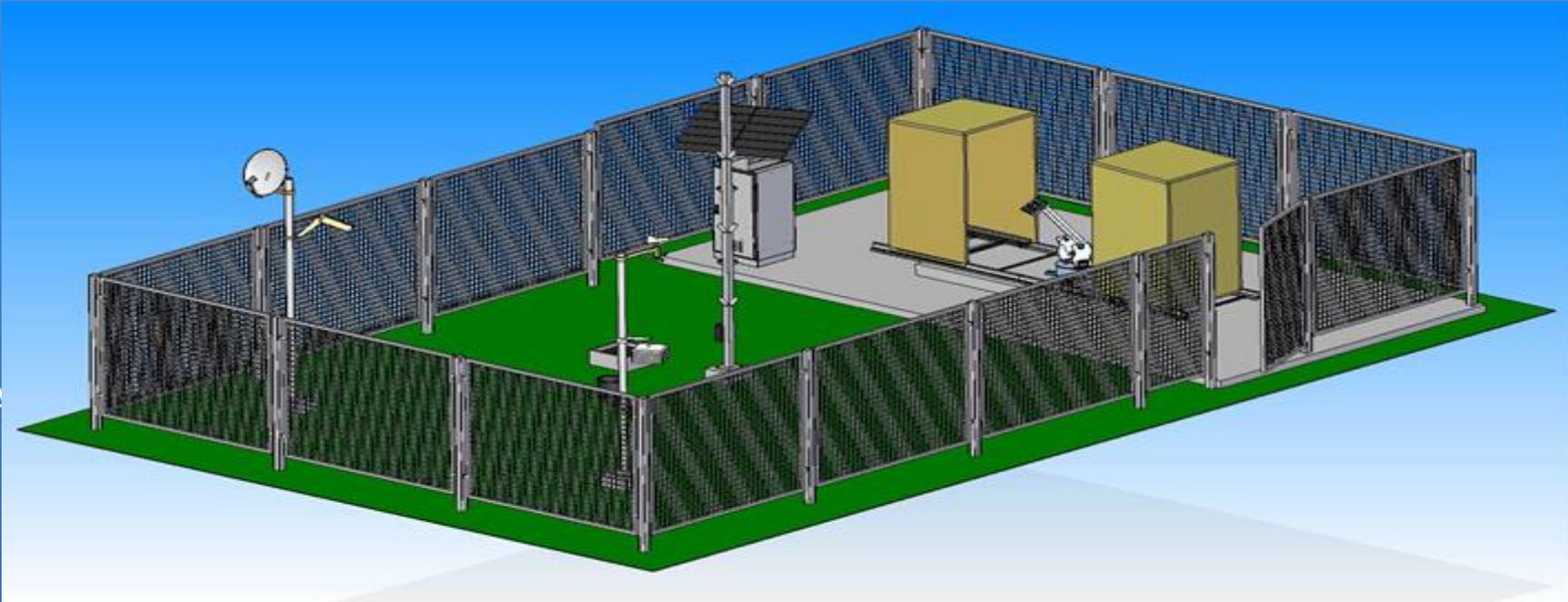


AWS with generators



AWS only

Automatic weather station with ground based generator and rocket launcher



- Automatic weather station (AWS)
- Automatic rocket launcher
- Ground based generator
- Automatic fire sprinkler

- Camera
- Conection
- Solar electric power
- Sensor to detect movement

Cooperation RHMZ RS and JPPP RS

Analysis and nowcasting centre



- Put together all available observations (AWS, METAR data, radar, satellite and sounding data) with preliminary field from background forecast model and generate a spatially distributed, time-evolving, three-dimensional representation of atmospheric patterns and processes
- Send products to the users



Cooperation RHMZ RS and JPPP RS

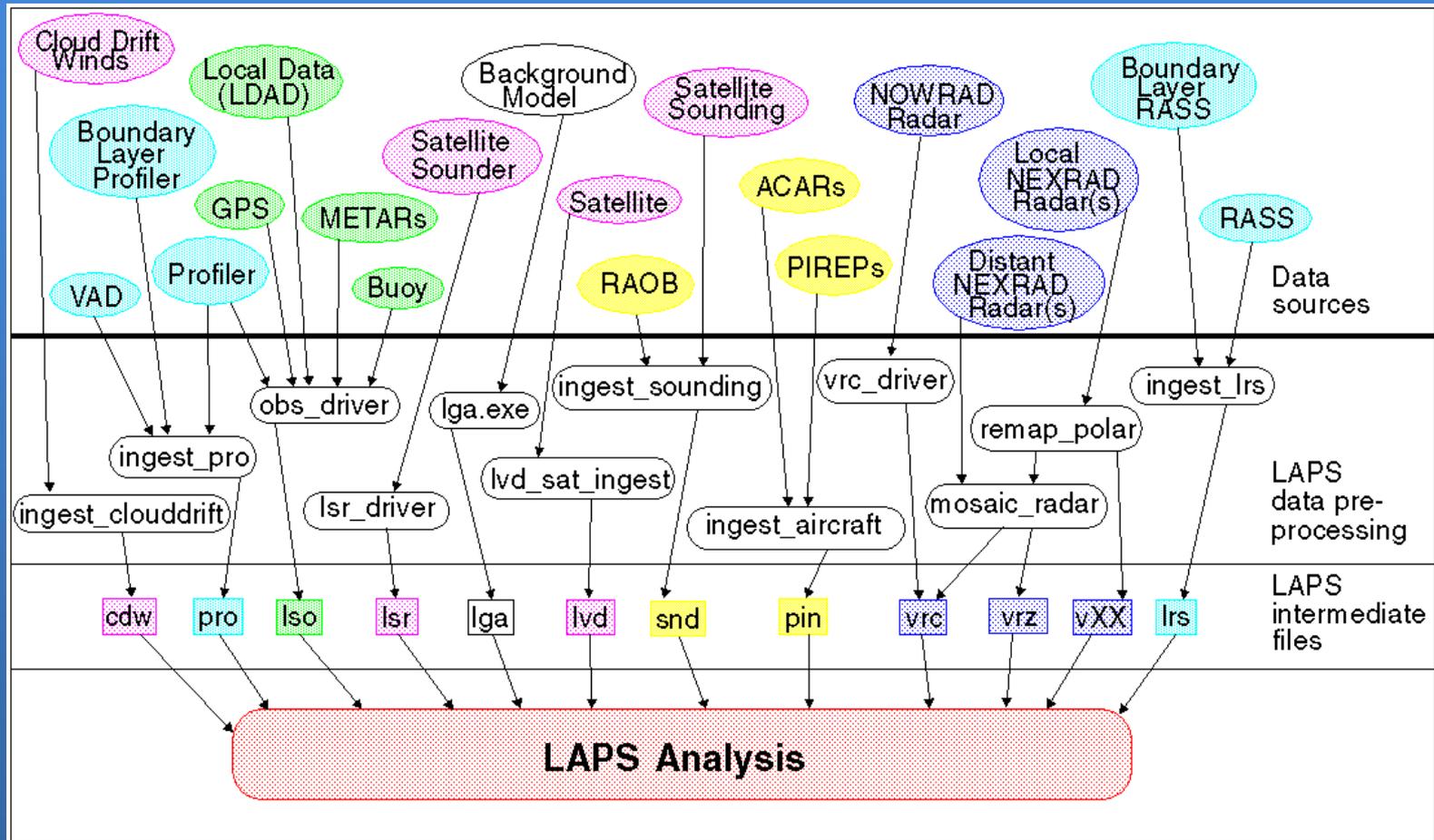
LAPS – Local Analysis and Prediction System

- **Designed to accept and exploit all available data sources**
- **Create analysed meteorological fields (pressure, temperature, humidity, wind, clouds) with the focus on mesoscale systems**
- **Build products for specific application (hail suppression activities, hydrology, aviation, Republic administration of civil protection, hydroelectric plants and wind power)**
- **Nowcasting and early warning system**



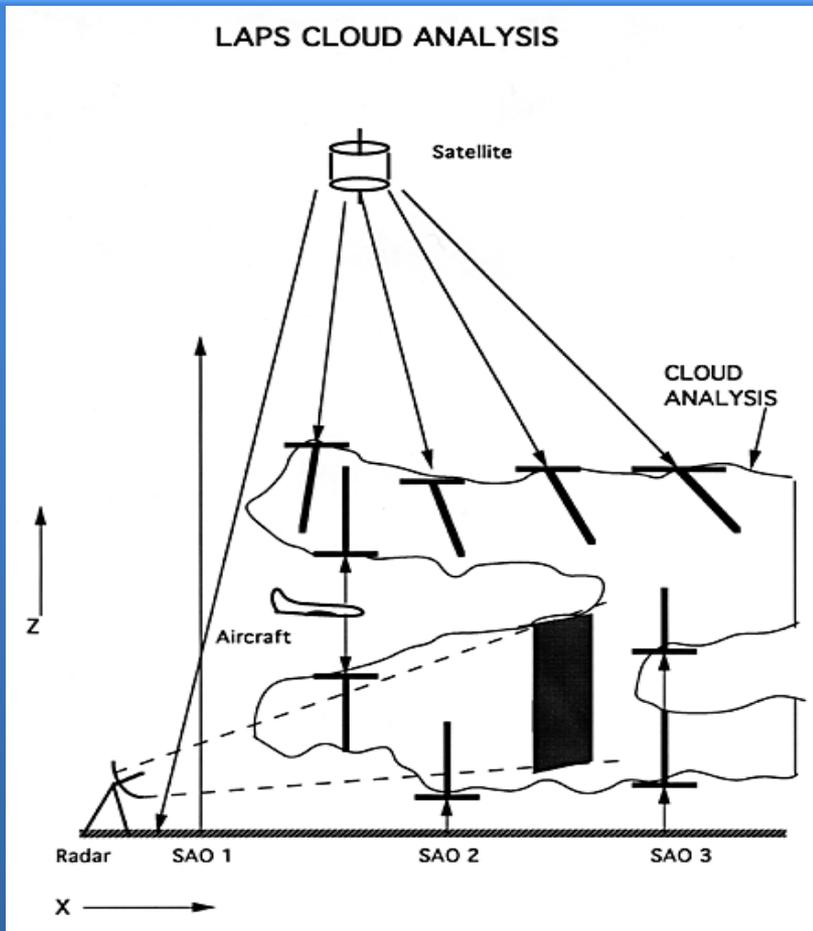
Cooperation RHMZ RS and JPPP RS

LAPS – scheme



Cooperation RHMZ RS and JPPP RS

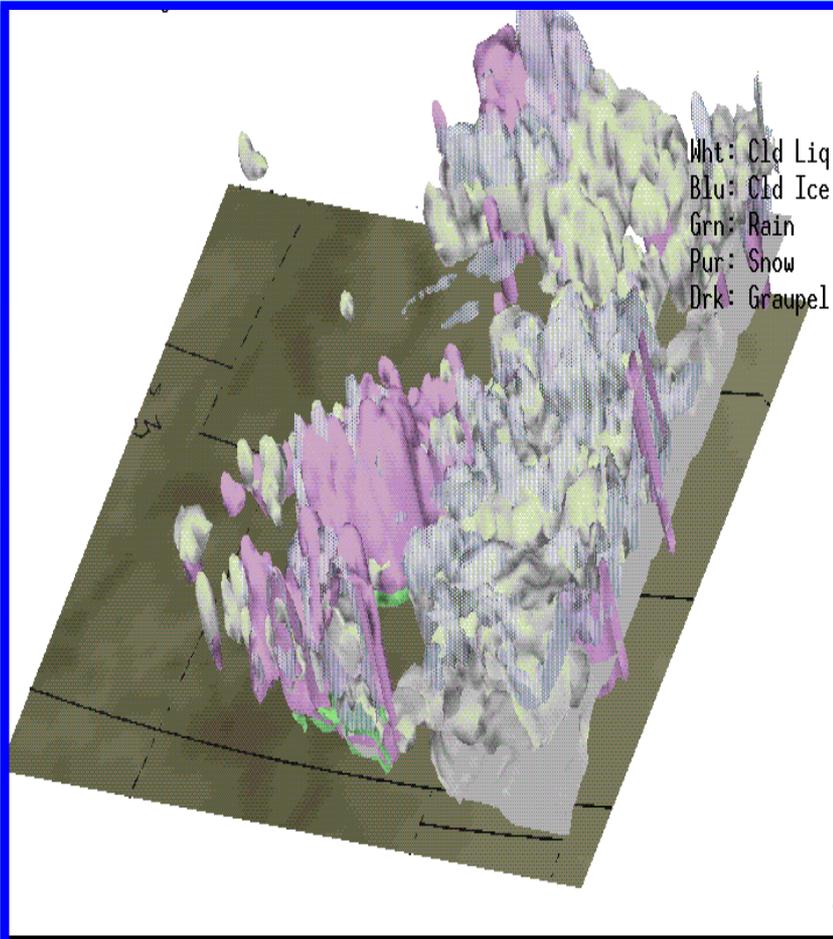
LAPS – cloud analysis



- 3D cloud distribution
- Cloud type
- 3D hydrometeor classification and surface precipitation
- Liquid and ice concentration

Cooperation RHMZ RS and JPPP RS

LAPS – cloud analysis



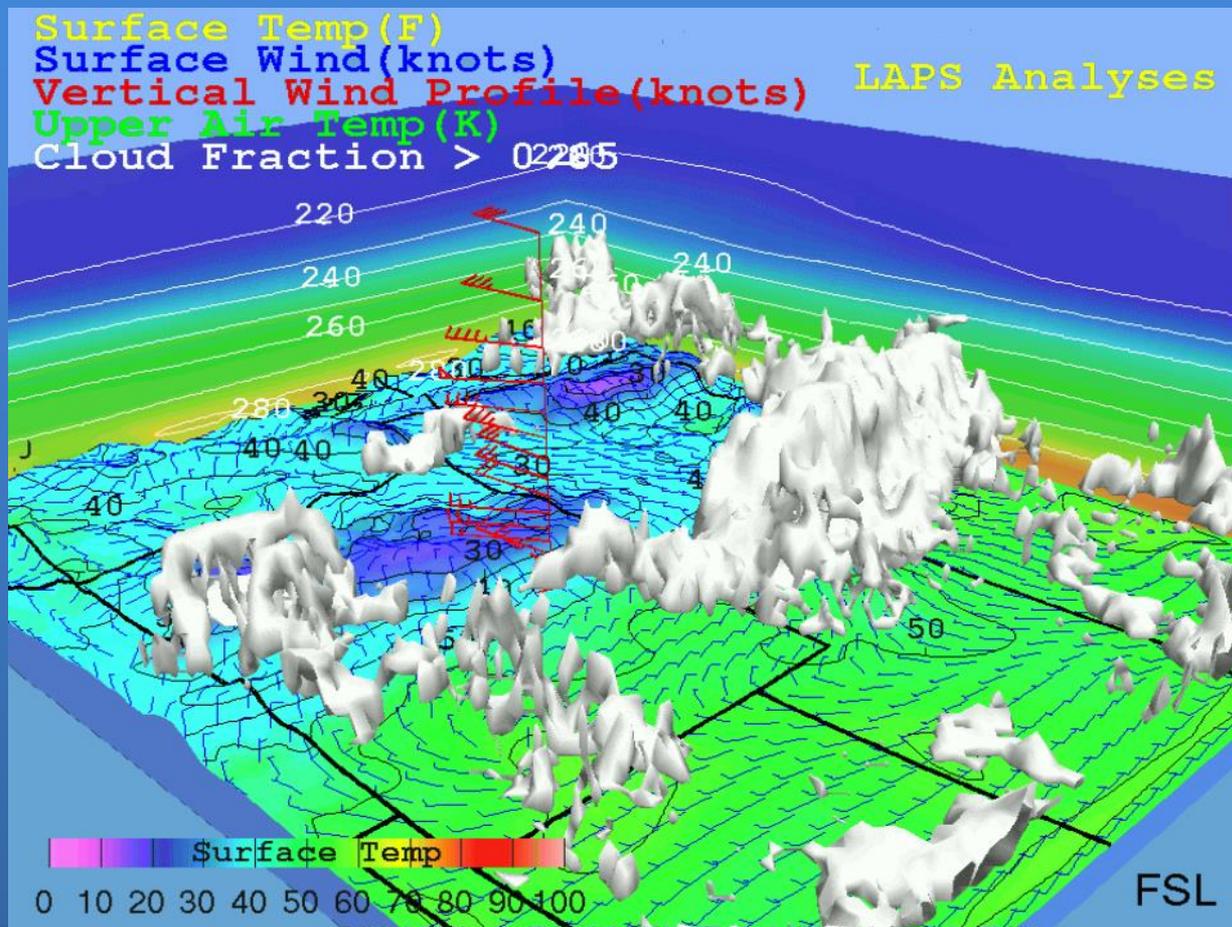
Dual-pol radar data play an important role in precipitation and cloud analysis

LAPS system is upgraded to accept dual-pol radar parameters (ZDR, KDP and RHV) to better capture heavy rainfall and diagnose hydrometeors, especially hail events

Additionally, many instability indices are calculated, which give the potential of the atmosphere to produce extreme weather events

Cooperation RHMZ RS and JPPP RS

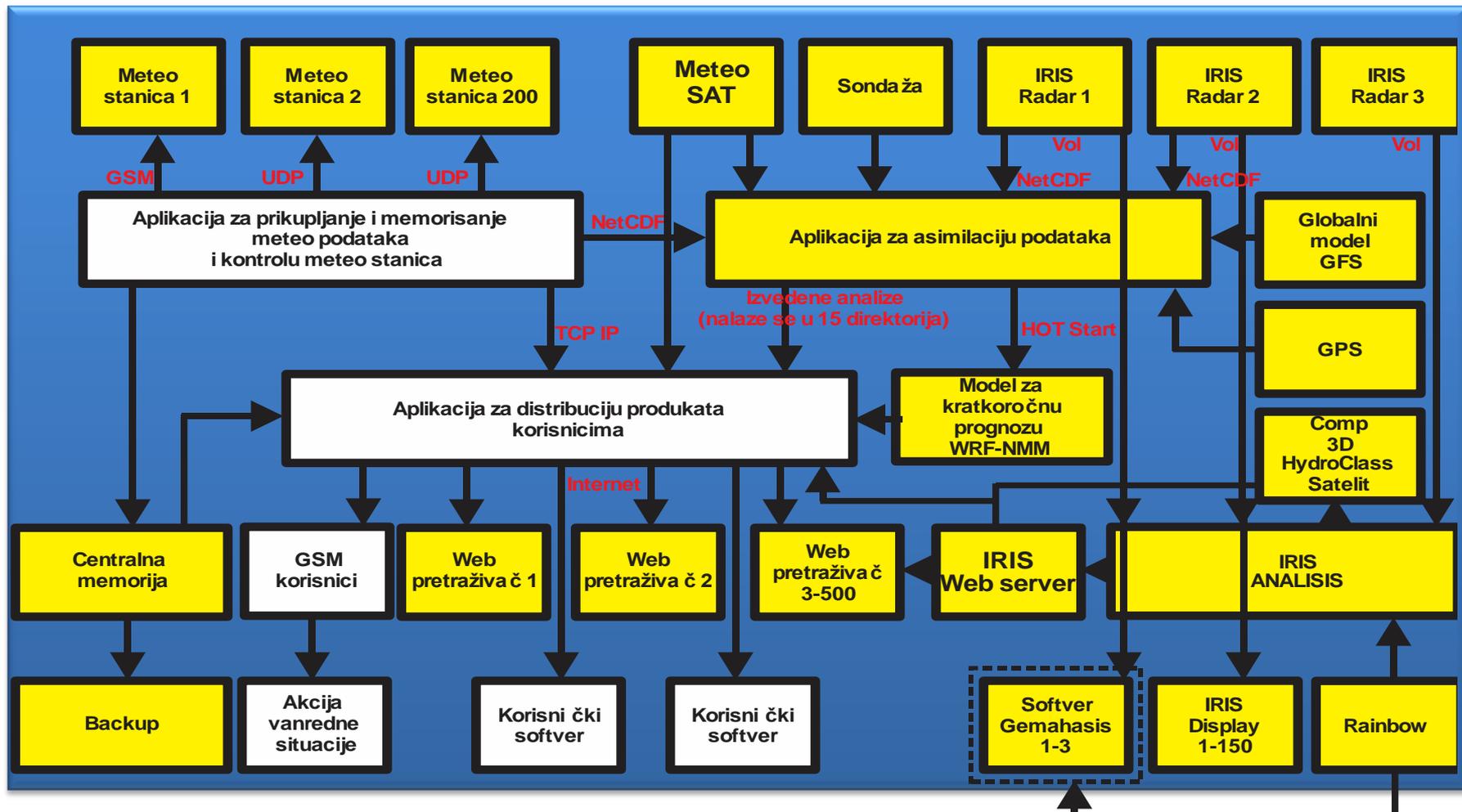
LAPS – cloud analysis





Cooperation RHMZ RS and JPPP RS

Analysis and Forecast Centre Scheme





Cooperation RHMZ RS and JPPP RS

Analysis and Forecast Centre Scheme

Users:

- Hail suppression activities
- Hydrology
- Aviation
- Republic administration of civil protection
- Road services
- Hydroelectric plants
- Renewable energy

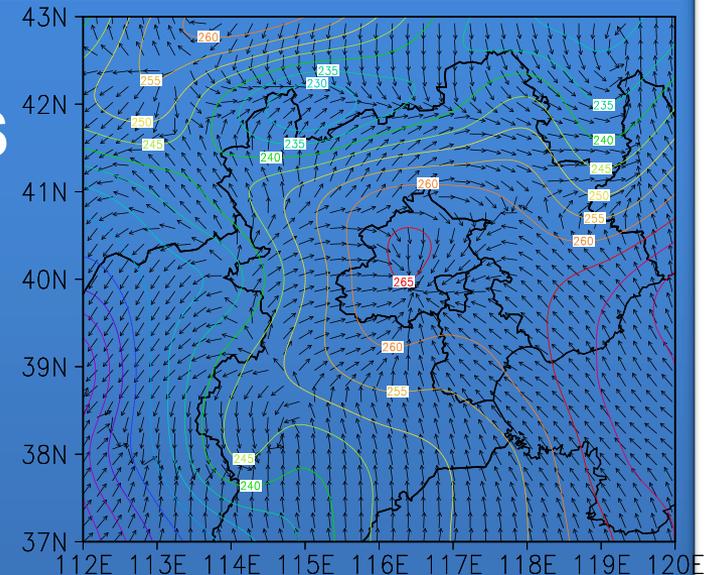
Cooperation RHMZ RS and JPPP RS

Hail suppression activities



- High spatial and temporal resolution of the meteorological parameters
 - Instability indices
 - Capability to capture small scale variability
- Wind shear and convergence zones in the lower atmosphere

LAPS

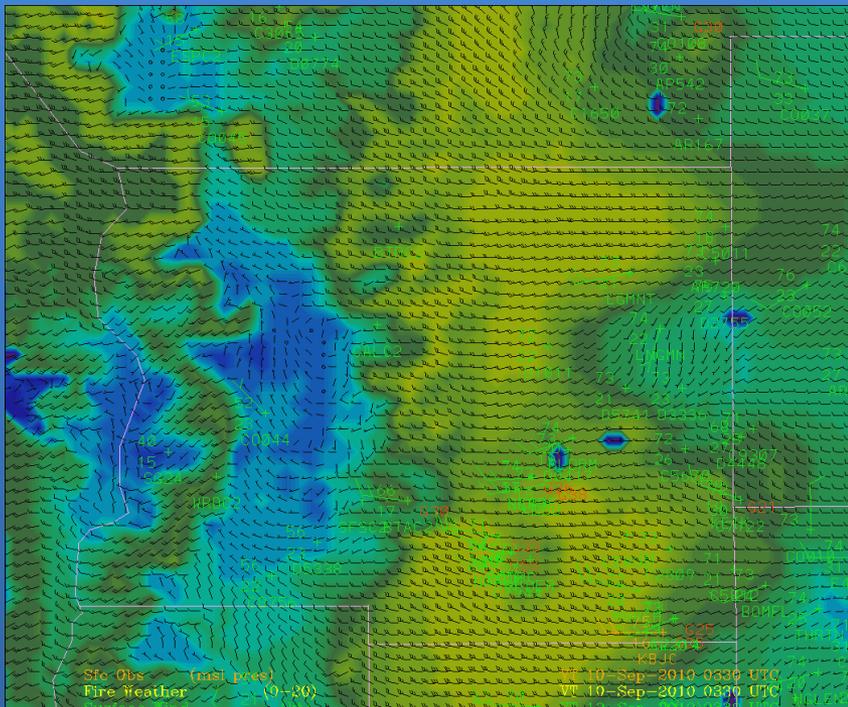


- Resolve circulation taking into account all observed data and the local effects

Cooperation RHMZ RS and JPPP RS

Fire weather analysis and prediction

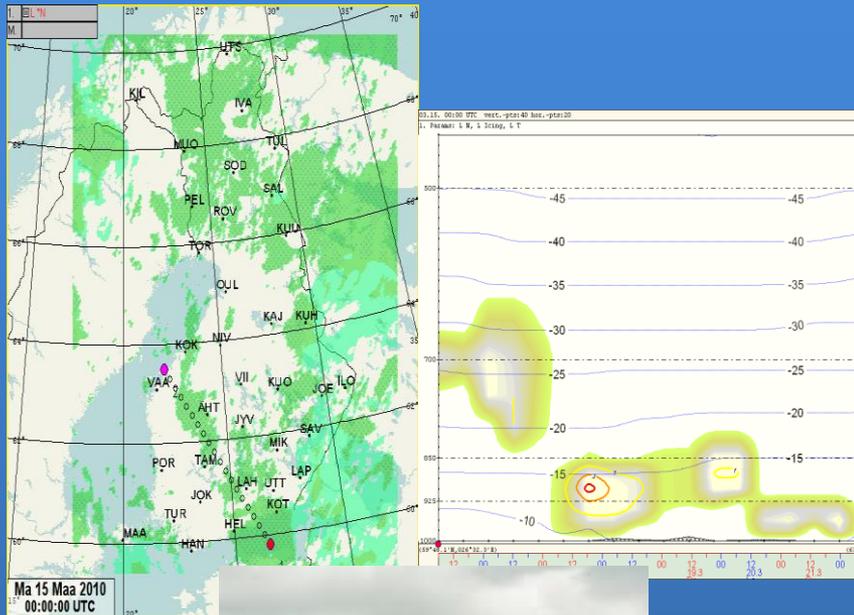
High resolution Fire weather index and wind analysis



- Ventilation index and PBL winds
- PBL height
- Heindex index (low, mid, high)
- Fosberg fire weather index
- LAPS fire weather index
- Standard surface and upper air fields

Cooperation RHMZ RS and JPPP RS

Aviation



- 3D clouds (cover, top and base height)
- Icing intensity
- Visibility
- Wind gust
- Severe weather



Cooperation RHMZ RS and JPPP RS

Renewable energy applications

**Detailed & consolidated info on clouds
and solar energy**



Fine scale turbine-level

wind forecasts



Icing on wings



**Spatial distribution and accumulation
of precipitation**

Cooperation RHMZ RS and JPPP RS

Road services and civil protection



- Discrimination of precipitation in winter storms
- Frozen rain situations
- Public warnings
- Heavy rain situations
- Flooding



Cooperation RHMZ RS and JPPP RS

Summary

- **Establishment of high advanced center for data analysis and nowcasting**
- **Deliver products to the users**
- **Cross-border cooperations**
- **International projects**
- **Additional improvement of the system based on the new progress in the science**



INFORMAL CONFERENCE OF SOUTH-EAST EUROPE DIRECTORS

Hosted by Republic
Hydrometeorological
Service of
Republic of Srpska,
Bosnia and Herzegovina



Thank you for your
attention



Public Company Hail Prevention, Republic of Srpska

