New functions of the *este system* – new possibilities for emergency response.

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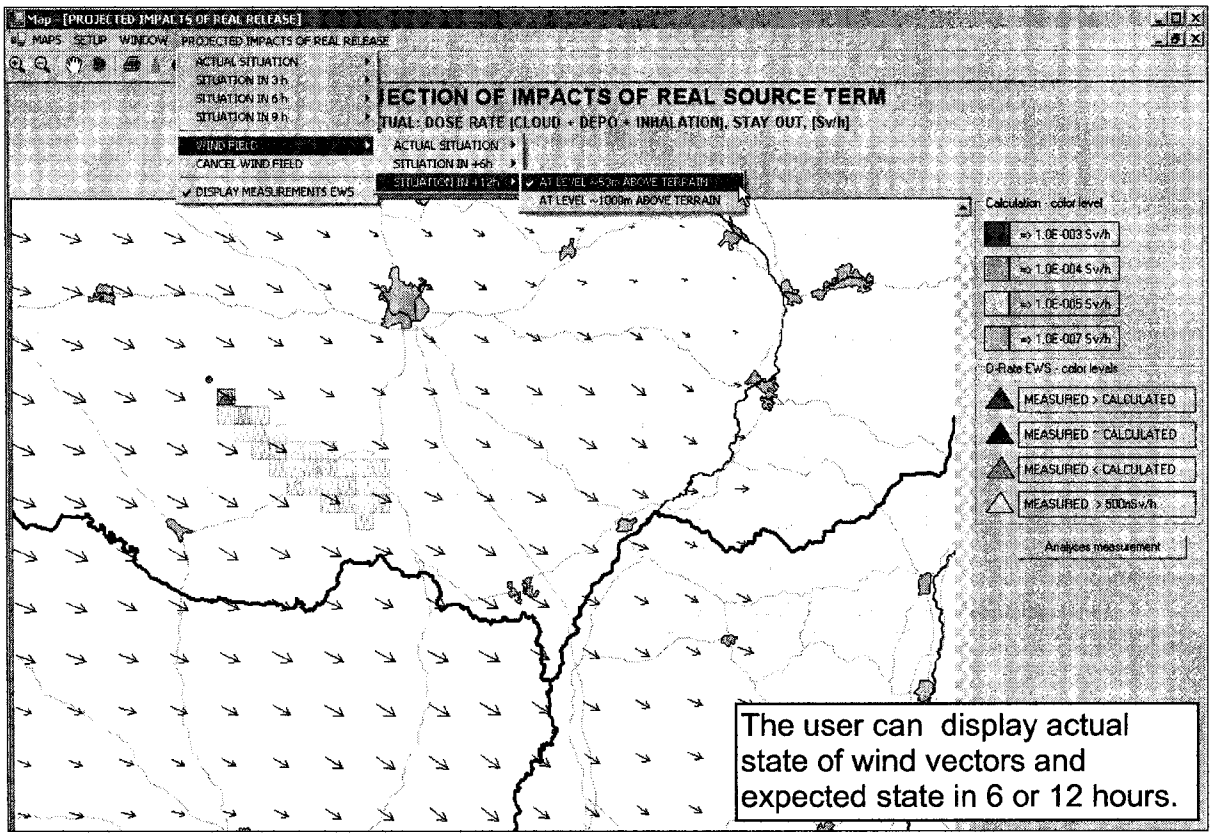
The ***este system*** (=eMERGENCY sOURCE tERM eVALUATION) is support instrument for off-site emergency response and its main objective is to assist to the crisis staff:

- to mitigate radiological consequences of significant releases,
- to manage the protective measures,
- to manage emergency monitoring.

At national level the ***este systems*** are implemented at the Emergency Response Centre of the Czech Republic (SÚJB) and Austrian versions are implemented at the Crisis Centre of the Austrian Republic (BMLFUW).

New features of the ***este system*** improve the possibilities of the emergency response:

- built-in geographical information system (GIS) module,
- built-in puff model (PTM) enables calculations of impacts to larger distances,
- online connected to numerical weather prediction data (wind fields),



- online connected to the early warning system (EWS) data (dose rate measured across the countries),
- every new map of actual impacts calculated is automatically online compared with really measured dose rates from the EWS,
- every new calculated map of impacts is archived and can be accessed and used with full functionality by any allowed (remote) user.

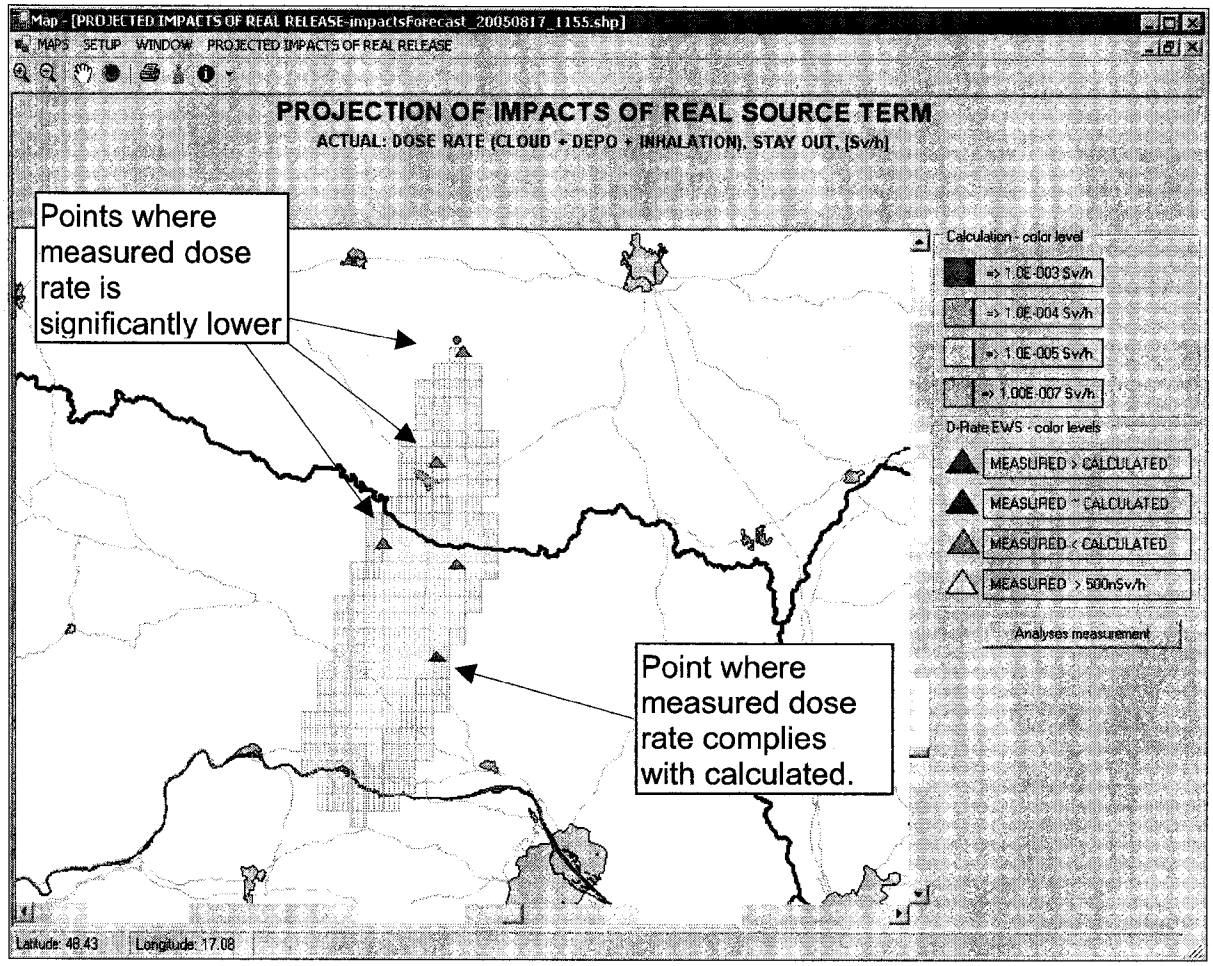
este system can now be utilized not only in close (40 km) vicinity of the point of the release (NPP), but radiological impacts are now calculated across the whole country or over the country border.

Puff Trajectory Model (PTM) with the background of geographical information system (GIS) is

included in ***este***. Numerical weather prediction data (wind fields) predicted for the whole or the part of the country are online connected with ***este*** and utilized for the puffs movement simulation and impacts calculations. It means that not only meteorological data from the point of release (measured or predicted), but "meteorological data wind field" predicted for larger region across the country are used by the ***este system***.

The wind field in the form of wind vectors can be graphically displayed on every map of impacts. It enables the user to check data/to check the ***este*** calculation and especially to compare wind vectors at the level near the terrain (~50 m above the terrain) and at the higher height (~1000 m above the terrain) in order to recognize (potentially) that in case of higher release height (above the mixing layer) there could be the threat of impacts in direction different than is the direction calculated by ***este***.

"Data assimilation to really observed conditions" process in the ***este system*** has been enriched and



improved. New functions in ***este*** can analyze and compare calculated radiological parameters by ***este*** and measured radiological parameters across the country. Data from radiological monitoring network (early warning system, EWS, measurement of dose rates across the country) are online connected with ***este*** and utilized for analyses.

Every new map of actual impacts generated by ***este*** (the map of impacts of really observed release to the environment) is automatically online compared with really measured dose rates from the EWS. User can see graphical comparison (color triangles) of calculated dose rate at given point and measured dose rate at that point on every one map of impacts of real release.

Special graphical user interface and data tables enable the user to check and analyze the whole map of impacts:

- the list of points (the name, coordinates, measured values and ***este*** calculated values) actually displayed as triangles on the map of calculated impacts, if any,
- the points where measured dose rate is significantly higher than calculated by ***este***,
- the points where measured and calculated dose rates comply each other,

- the points where measured dose rate is significantly lower than calculated by ***este***,
- the list of all actually known EWS points with measured dose rate.

Every new calculated map of impacts is immediately archived (saved for any future or parallel use) in the MapArchive of the ***este system***. This new approach potentially enables any allowed user that can be scattered across the country:

- to access these results,
- to import them to his computer,
- to utilize the maps of impacts and full information calculated on the maps (dose rates, doses, activities by nuclides) in absolutely the same way, with the complete functionality.

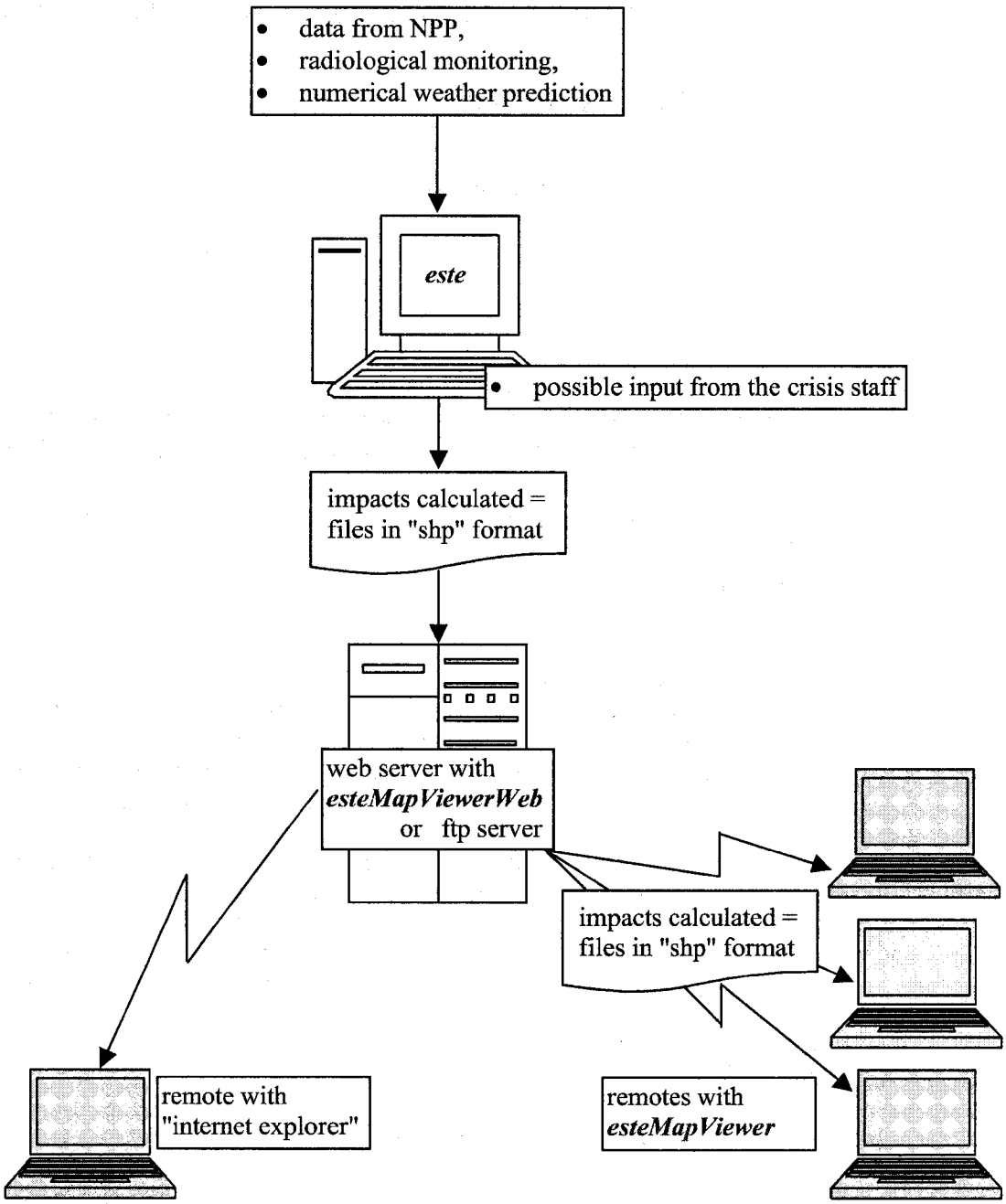
This approach enables the emergency response to be organized in such way that:

there is one central point (Crisis Centre) in which

- large amount of data (technological, radiological, numerical weather prediction) are online imported and gathered and all more or less complicated calculations are performed,

and there can be a lot of other remote points (Regional Centers, mobile monitoring groups, ...) throughout the country where

- calculated maps of impacts from the central point can be used and analyzed with the full and complete functionality and practically at the same time as at the central point.



Scheme: An example how maps of impacts calculated by ***este system*** at the central point could be accessed and used with full functionality by the remote users throughout the country.