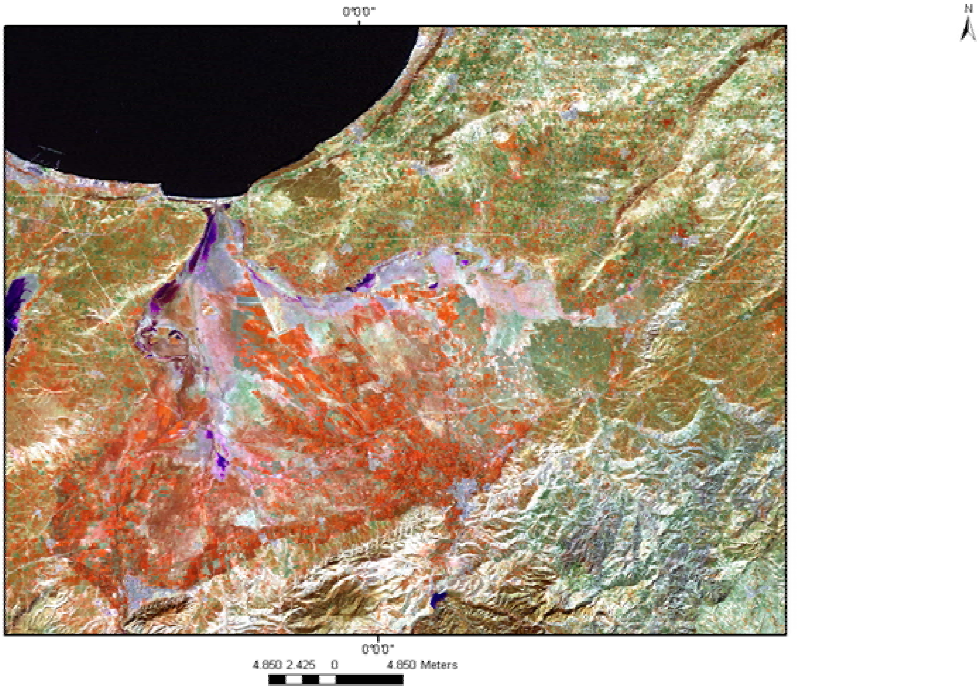

Fig.11 a - c: Overlay of LANDSAT ETM and SRTM data

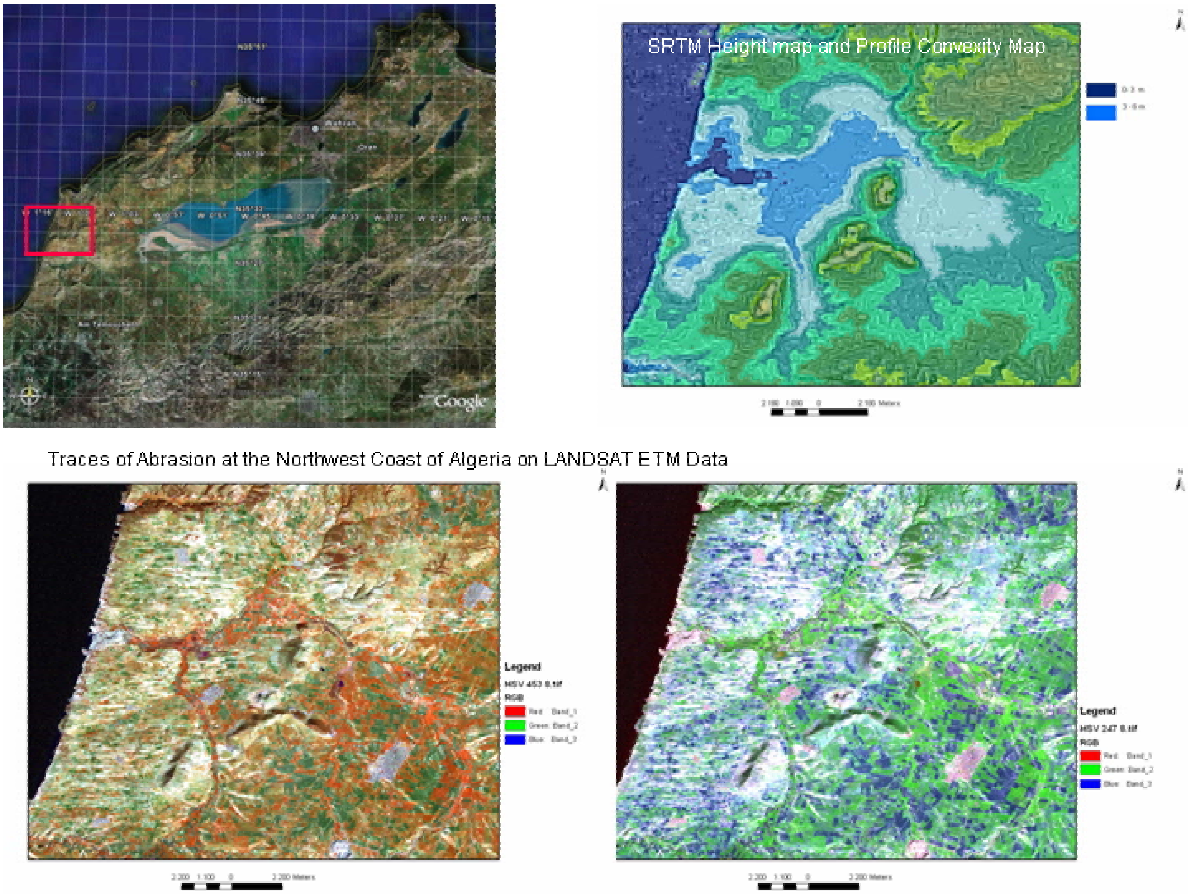

Fig. 12 a: Traces of abrasion visible on LANDSAT ETM imageries

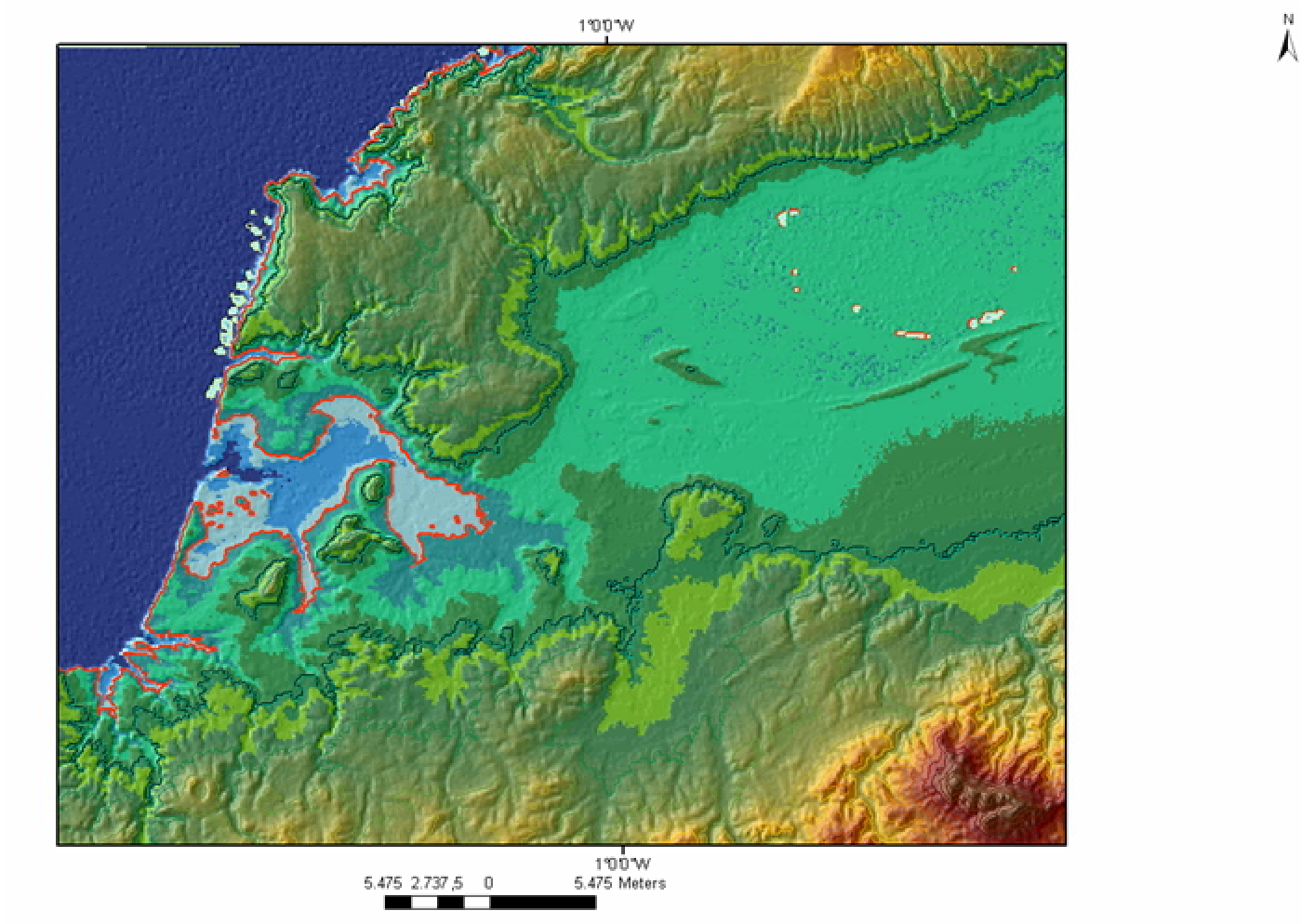

Fig. 12 b: Areas susceptible to flooding as indicated by the red contour line

In the case of catastrophic tsunami events estuary plains and broader riverbeds are very likely prone more to tsunami wave propagation than the environment. River mouths represent a large entrance for tsunami waves.

In Fig.13 such a river mouth is presented from NW Algeria. The morphologic properties of the mouth of the river valley seem as if influenced and formed by flooding.

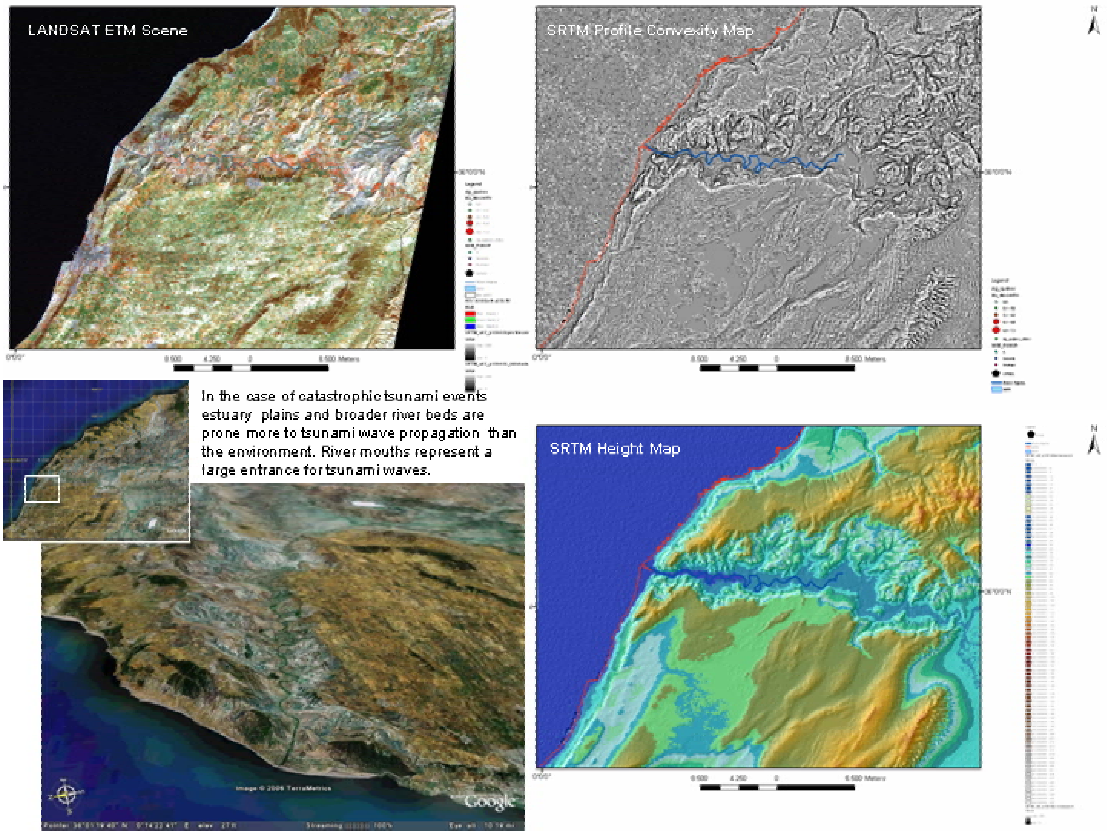

Fig.13: Potential Risk of river mouths

Analyzing the LANDSAT ETM imageries it is obvious that traces of high energy flood waves are not only visible in areas with sedimentary covers. They can be observed in hard rocks as well. Fig.14 demonstrates this.

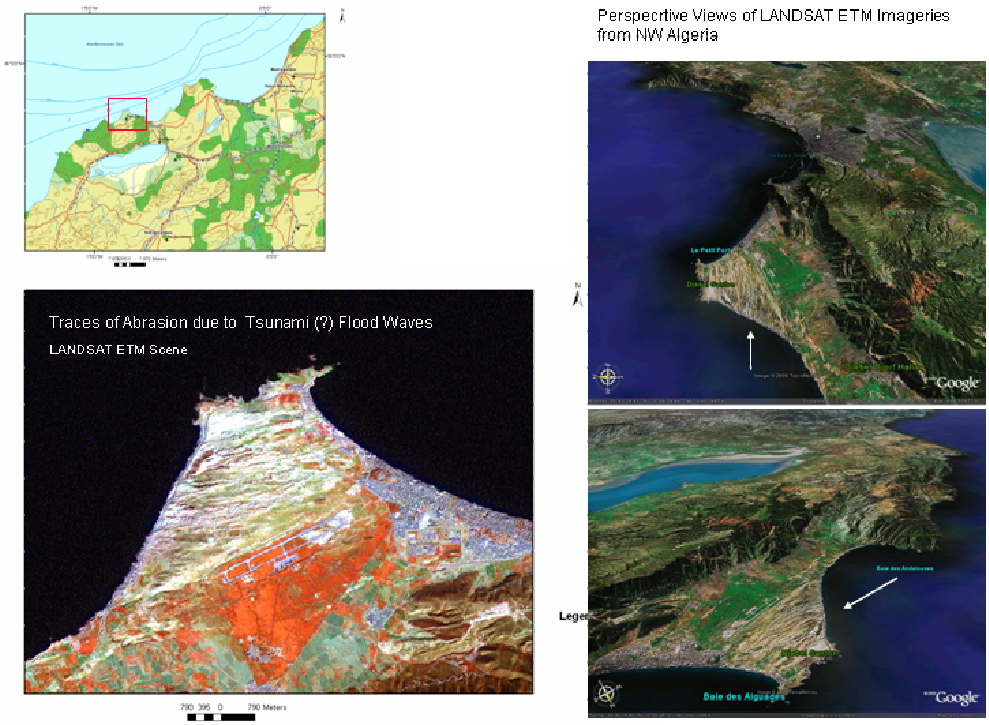

Fig.14: Traces of abrasion and erosion assumed to be related to past tsunami events

The assumed traces of abrasion in the different coastal areas can be used for deriving the main direction of the flood waves creating the run-up. Fig.15 presents the result of the derived wave direction.

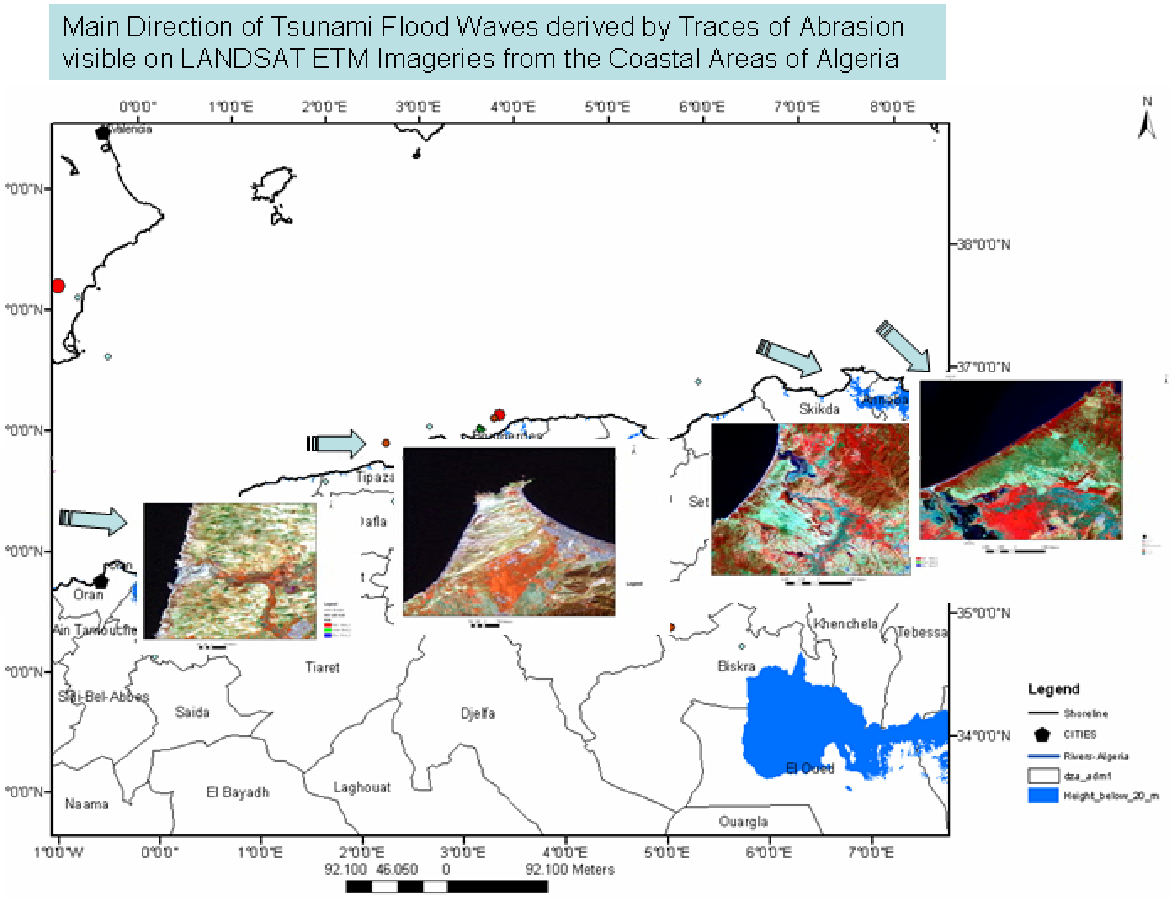

Fig.15: Main direction of flood waves

4. CONCLUSIONS

Evaluations of LANDSAT ETM and SRTM data show clear evidence that catastrophic tsunami events have happened in the past at the coasts of Algeria. This should be considered in the emergency planning and measurements of disaster preparedness.

The design of a common GIS database structure - always open to new data - can greatly contribute to the homogenisation of methodologies and procedures of tsunami risk management.

As one component of such a GIS the following approach is recommended:
- extracting morphometric parameters based on DEM data and
- combining the resulting maps with satellite and other geodata.

Meanwhile, the so-called Free–GIS software fulfilling the basic GIS requirements, as for example DIVA-GIS, Map Window GIS, SAGA GIS, etc., can be used without costs.

Additional Free-GIS software is available also for the spatial analysis of DEM data. Basic LANDSAT ETM and SRTM data are provided free of charge for scientific research purposes for example by the University of Maryland/ USA.

Therefore the use of the remote sensing and GIS technology for tsunami hazard site assessment and for the elaboration of hazard maps according to the presented approach can be

recommended as low cost approach that could be achieved by local communities in Algeria as contribution to a GIS data base.

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http://worldwind.arc.nasa.gov/download.html

http://earth.google.com/

Shapefiles:

http://map.ngdc.noaa.gov/website/seg/hazards/viewer.htm
http://www.cipotato.org/diva/data/DataServer.asp?AREA=DZA&THEME=_adm