Synergy of ASAR and RADARSAT-2 ultra-fine acquisitions for ground deformation monitoring by means of DInSAR and PS. Case study gulf of Corinth - town of Patras, Greece

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The Gulf of Corinth presents a major scientific and/or socio-economic interest such as the Patras broader area, the Psathopyrgos fault zone which is considered to be a presently active structure, the Rion-Patras fault zone, the town of Patras and the Rion-Antirrion bridge. Patras is the third most populated town of Greece with more that 200,000 inhabitants. The bridge of Rion-Antirrion is 2,880m along (its width is 28 m) and connects the eastern and western Greece. The bridge has been designed and constructed taking into account the increased seismicity of the area. Psathopyrgos fault zone which is acting as a transfer zone between the Corinth and Patras rift as well as the Rion-Patras transfer fault zone are investigated for any detectable ground deformations that could be indicators/precursors of inter-seismic accumulation processes before a main seismic event. The town of Patras is investigated for any detectable ground/buildings deformation due to human impact or geophysical processes. The potential of Rion-Antirrion bridge and surrounding area deformation monitoring is also investigated and assessed.

The studied area presents major difficulties for DInSAR/PSI applications, due to its intense vegetation coverage and abrupt topography presenting, high slopes and shadowing effects. Moreover the nature of the topography and the location of the study area, between Aegean and Ionian seas, result to high precipitation rates and extended cloud coverage. All these characteristics contribute to high decorrelation of the interferometric products. For the estimation of the occurred deformations a series of ASAR/ENVISAT (image swath 2) data are processed by means of PSI and DInSAR techniques, but RADARSAT-2 (ultra-fine beam mode) data are processed only by means of DInSAR technique due to its lack of historical data. The processing is carried out exploiting commercial and in-house software. The medium and high ground resolution added- value products are combined in thematic level and discussed.

Arsenic distribution in laterite deposits of the Balkan Peninsula

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The laterite deposits (Fe–Ni-laterite and bauxites) in the Balkan Peninsula are mainly located in the Mirdita–Sub-Pelagonian and Pelagonian geotectonic zones and are of great economic significance. These deposits have been affected by intense tectonism, which has created overthrusting, foliation, folding, and faulting. The investigation of arsenic in laterites is thought to be important for the ferronickel smelting process and the serious affect of the health. Minerals such as iron oxides and pyrite are of particular significance in controlling arsenic mobility, and hence aquifer contamination. Laterite samples from Ni-laterite deposits of Greece (Lokris, Vermio, Edessa, Olympos, Kastoria), Albania (Bitinca and Gouri-Perjuegjiun), Serbia (Rzanovo and Topola), bauxitic laterites and the Parnassos-Ghiona bauxite deposit were analyzed for major and trace elements, including arsenic (As). Arsenic concentrations for all laterite samples from the Balkan Peninsula range from < 2 ppm to a few decades ppm. However, arsenic concentrations for the individual laterite occurrences and deposits from Aghios Ioannis vary significantly from <2 ppm to 2600 ppm. Arsenic in the