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in Karst Regions**

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**Symposium program, abstracts
and field trip guide**



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Sinkholes as markers of karstic activity in the peridotites of New Caledonia (SW Pacific)

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Olivine which is the main constituent of peridotites is known to be an unstable mineral in tropical climate. Moreover, peridotites are estimated to dissolve from hard rock to ferricrete under meteoric water with nearly 90 % volume loss. The peridotites are observed on nearly 30 % of the Grande Terre Island of New Caledonia (SW Pacific) and they host nearly 30 % of the world's nickel reserve. At the outcrop, these peridotites present a karstic landscape resulting from weathering including enlarged fractures by dissolution. One of the most extensive karstic features of New Caledonia is a network of sinkholes (dolines), which correspond to temporary or permanent ponds. The question of the existence and characteristic of an underground karstic drainage system in the peridotites still remains an open question and the sinkholes might constitute a way to probe this karstic system. Moreover, the sinkholes constitute a specific environment for vegetation and aquatic life. Sinkholes are extensively developed in the Southern Massif of Grande Terre where our study is focused. We present an automatic mapping procedure of these sinkholes from remote sensing data: orthophotographs, DEM provided by the Government of New Caledonia and Lidar data provided by Vale. The Lidar data have proved to be very efficient in detecting both the shape of the sinkholes and their topography. Different detection methods are illustrated with emphasis on their complementary aspects. Distribution of sinkholes is compared with the geological structures. Finally a preliminary attempt of classification of the sinkholes based on remote sensing and field observations is proposed.