

Complement of Optical satellite image and Radar satellite image in the construction of Cartographic Bases

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Geographical and or climate conditions are a limiting factor for the capture of optical satellite images. Then the radar image emerges as an alternative for capturing terrain information, as they are able to pass through the clouds.

Some areas of Chile and especially the north coast and the south by its geographic location have cloud cover almost the entire year. Making it difficult to build or update the cartographic base. This known that images of medium and high resolution is possible to extract planimetric information by automatic vectorization or digitizer on screen, which requires processing the first image either geometrically (orthorectification) and spectrally (enhancement colors and elements that we are interested). This happens if the image you want to work is without clouds, if not in areas covered by clouds is impossible to extract information.

It is proposed as a technique of replacing these areas with radar imagery and create a joint product that enables extracting planimetric information useful.

The process to make the images, both optical and radar, for extracting useful information or photo-interpretation is similar in both cases we need to "Ground Control Points" (GCP) and a "Digital Elevation Model" (DEM). Based on these inputs (GCP and DEM) and with dedicated software for each type of image, the orthorectification is possible.

Additionally we are able to extract the DEM of the area, from a pair of radar images superimposed by interferometry. With inputs for mapping an area of interest are:

An optical image, two radar images, a set of control points.

After the process we have two orthorectified image, an optical and radar with which we can replace any area of clouds in the optical image.

The expected result is an orthorectified optical image and an amplitude radar image, with corrected terrain, which can be merged, patched or to make mosaic. Finally we have like result a "planimetric cartographic base."

Eventually we can extract level curves from the DEM, with topographical information.

We conclude that the optical and radar satellite technology may be complementary techniques to help to make terrain maps.

KEY WORDS: optical satellite image, radar satellite image, interferometry, cartographic base, orthorectification.