



Chile



“FASat Charlie: A contribution to the development of Chile”

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Chilean Air Force

Committee on the Peaceful Uses of Outer Space

57th Session, 11-20 June 2014

Vienna, Austria

Honor – Loyalty – Duty Compliance – Service Excellence

CHILEAN SPACE PROGRAM VISION

Our aim is to exercise our space capabilities for the benefit of nation development.



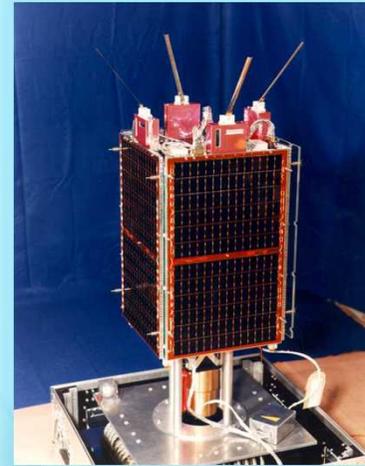
OVERVIEW



- I. Chilean satellites: FASat program
- II. SSOT and FASat Charlie
- III. Operational Concept and National Space Structure
- IV. Uses of FASat Charlie
- V. Future Development

CHILEAN SATELLITES: FASAT PROGRAM

- 1995 Chile Air Force makes a first attempt to put an experimental satellite in orbit, FASat-Alpha, but launch is failed.
- 1998 same as above, is successfully launched FASat-Bravo, experimental satellite which remained in operation until 2001.
- 2012, as a national initiative, and under the Chile Air Force responsibility, was launched the first operational Chilean satellite.



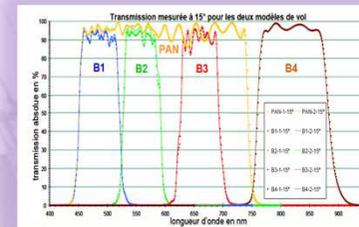
FASat Alfa-Bravo



FASat Charlie

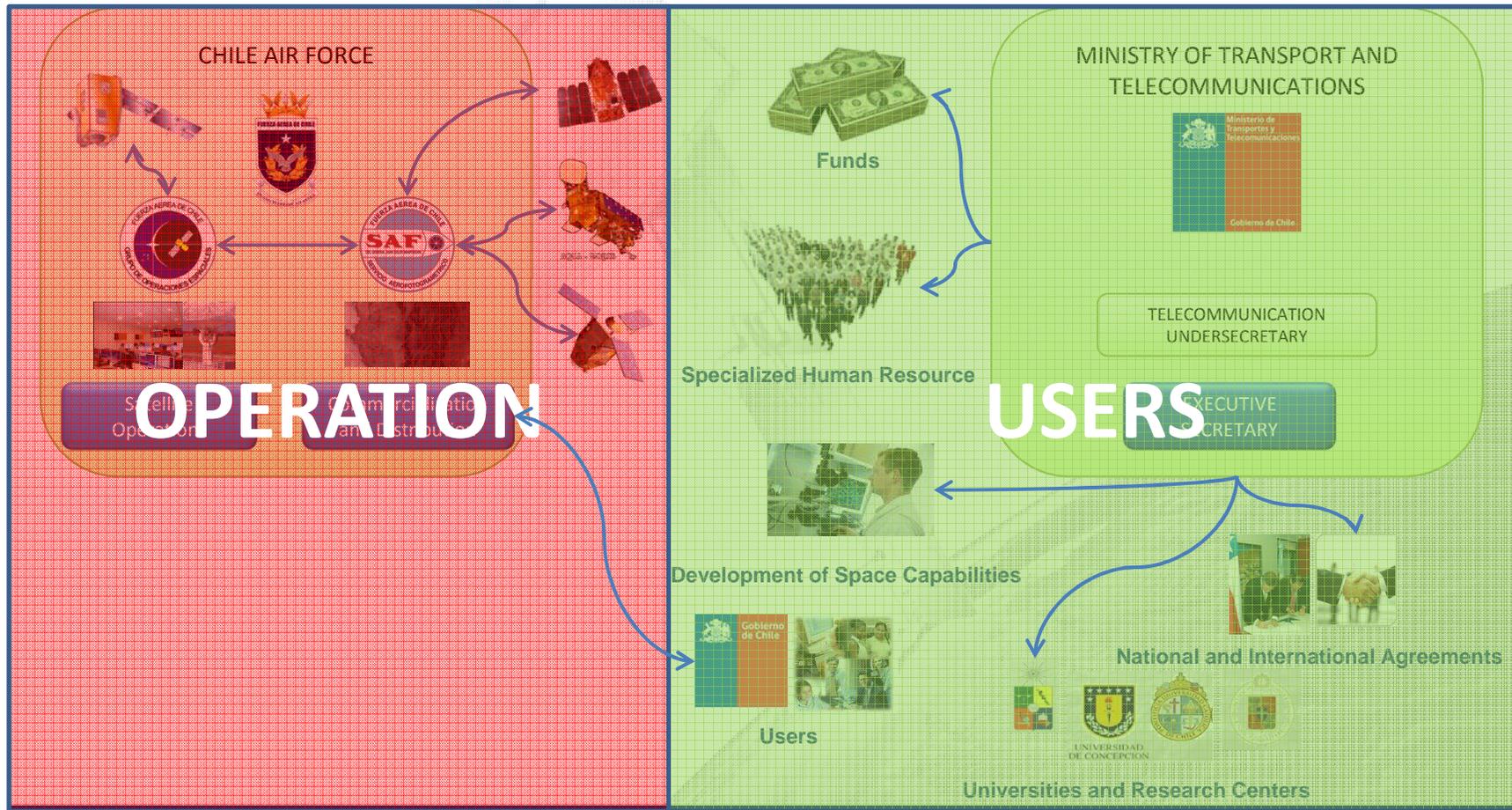
SSOT AND FASAT CHARLIE

- Space Segment (FASat Charlie):
 - AstroSat 100 Platform, Myriads family.
 - Payload, NAOMI camera.
 - 5 spectral bands:
 - 01 PAN 7000 CCD until 68 lines (8 by default).
 - 04 MS 1750 CCD each one.
 - Ground sampling distance:
 - GSD PAN: 1,45 m
 - GSD MS: 5,8 m (B1, B2, B3, B4) .
 - Swath width:
 - 10,15 km (620 km of altitude).
- Ground Segment:
 - Bi-Band Ground Station S/X
 - Control Station.
 - Image Processing Station.
 - Pixel Factory (SAF)



OPERATIONAL CONCEPT AND NATIONAL SPACE STRUCTURE

COUNCIL OF MINISTERS FOR DIGITAL AND SPACE DEVELOPMENT





USES FOR FASAT CHARLIE

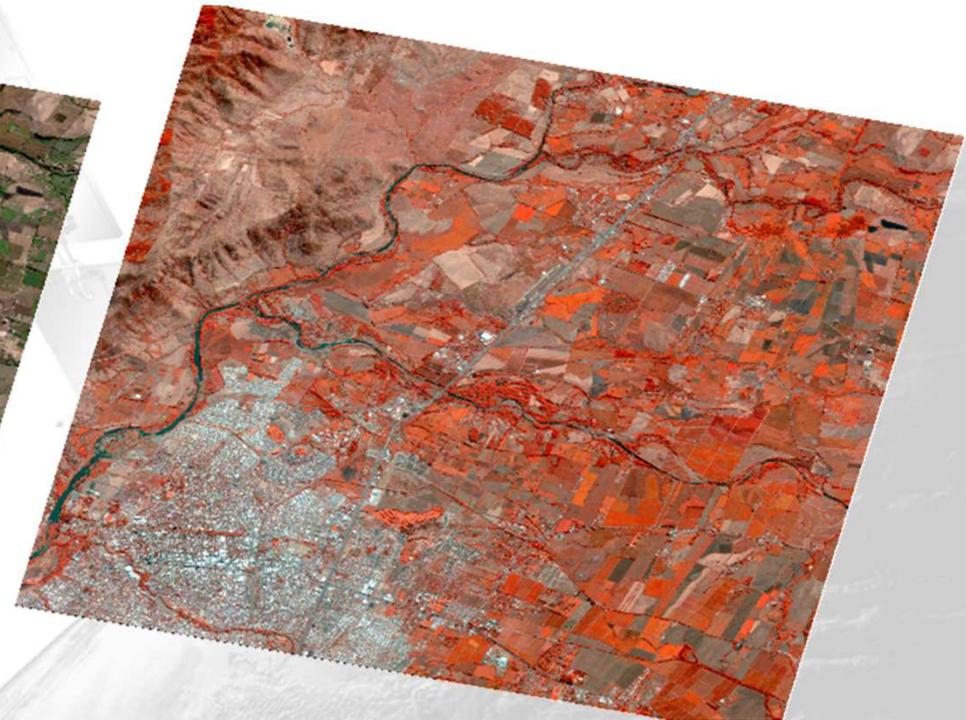


Agriculture, Forestry: Pest detection, Force of vegetation, Precision Farming

City of Talca, True Color (RGB), April 2012



City of Talca, False Color (Near IR), April 2012



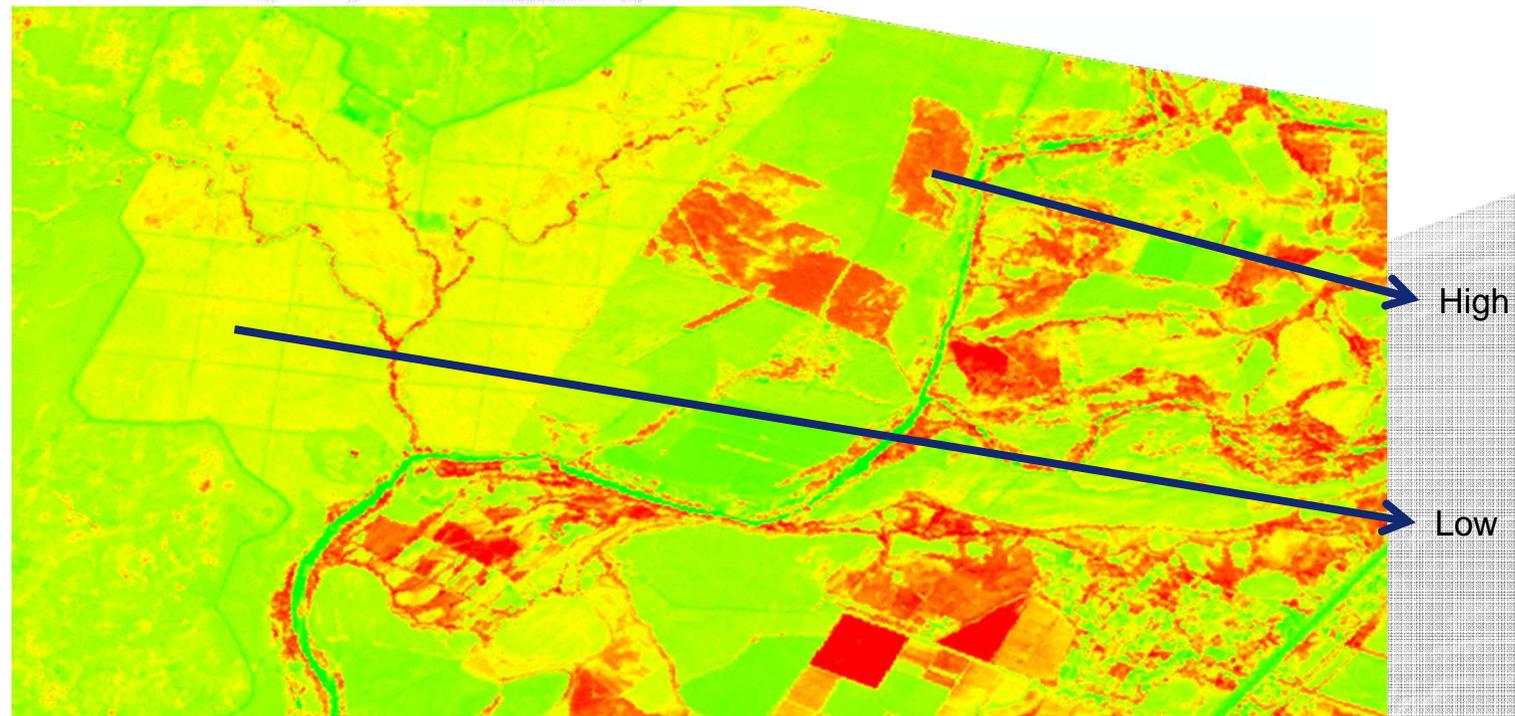


USES FOR FASAT CHARLIE



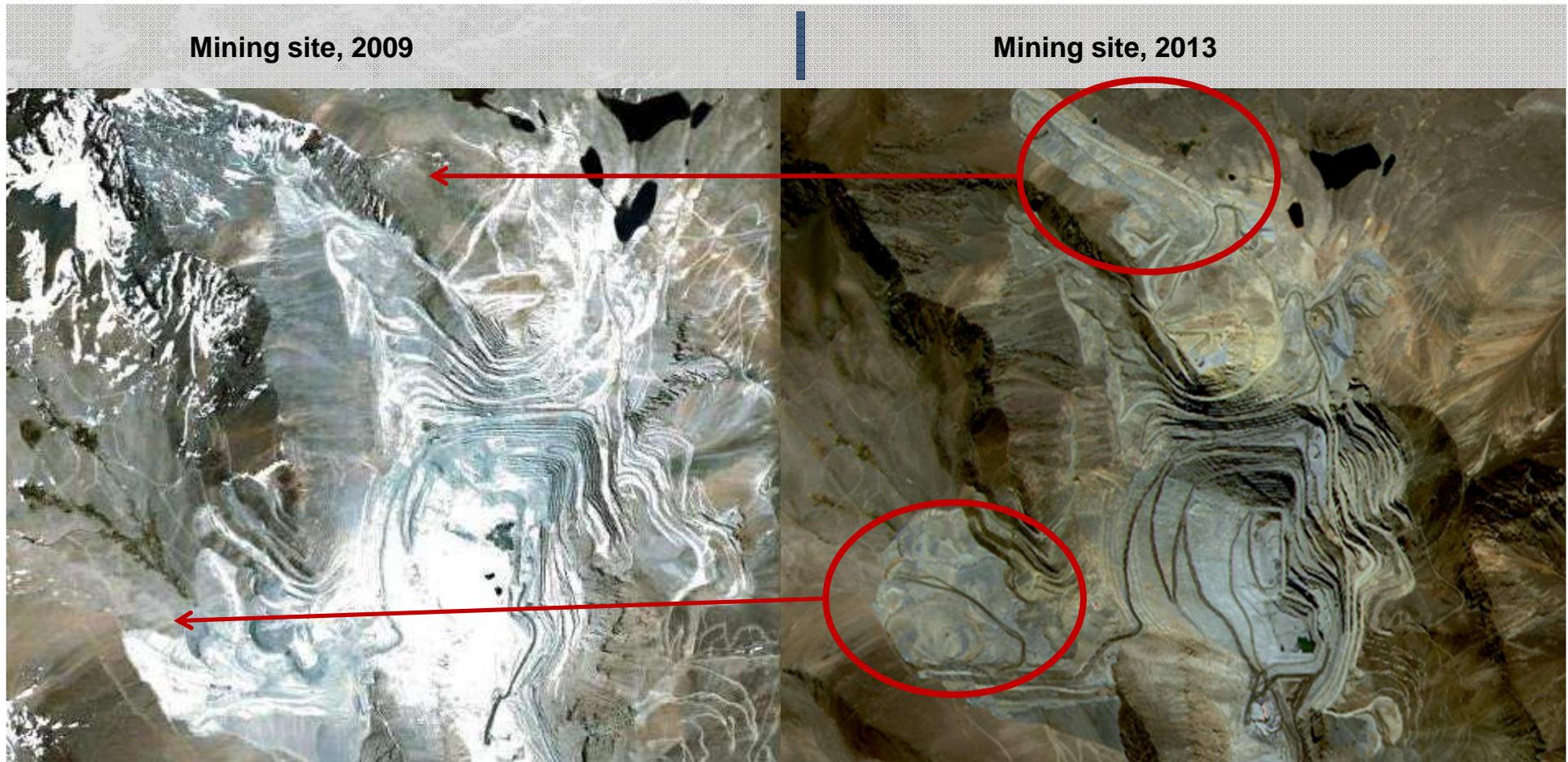
Agriculture, Forestry: Pest detection, Force of vegetation, Precision Farming

Normalized Difference Vegetation Index (NDVI) over City of Talca, north area



USES FOR FASAT CHARLIE

Mining, Industry: exploitation analysis, change detection, environmental operations

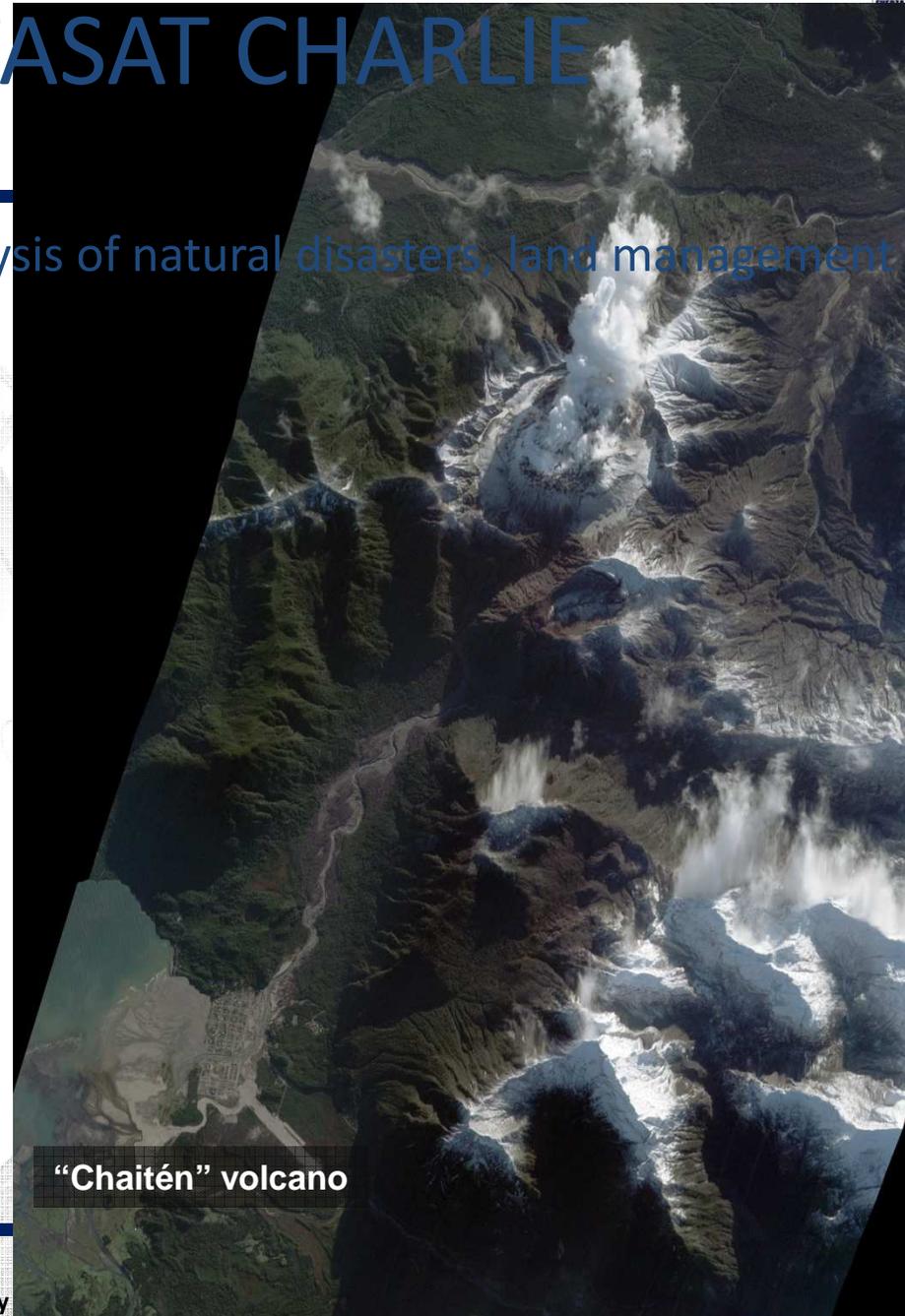




USES FOR FASAT CHARLIE



Public Services: Rural cadastre, analysis of natural disasters, land management

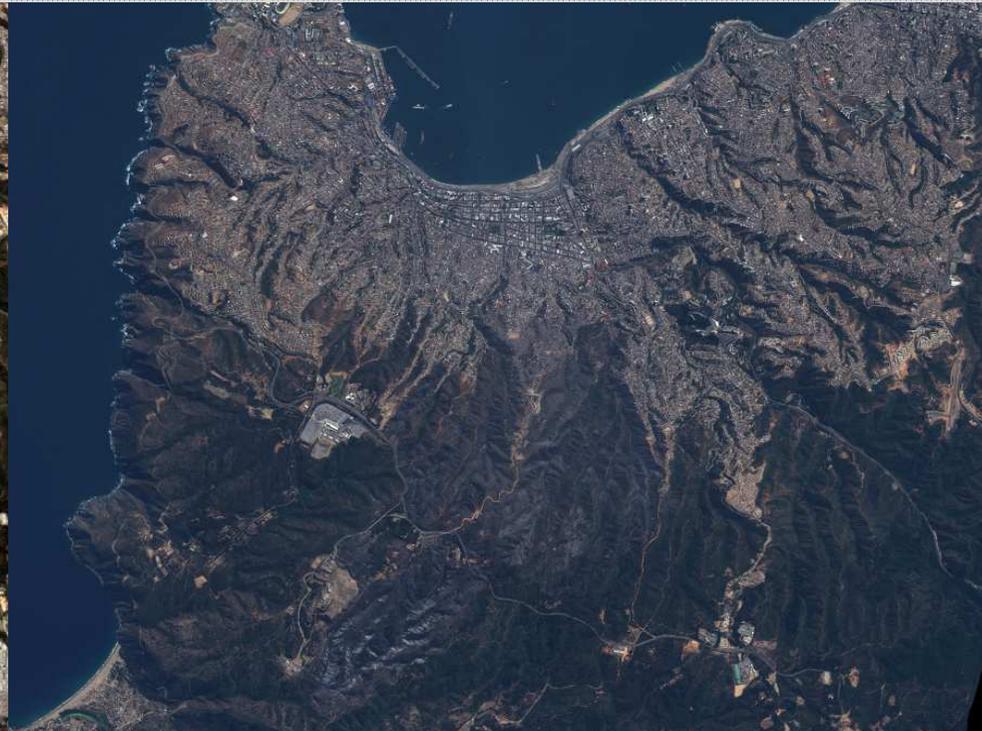


USES FOR FASAT CHARLIE

Valparaiso, 13th April, 2014, 12:05 local time

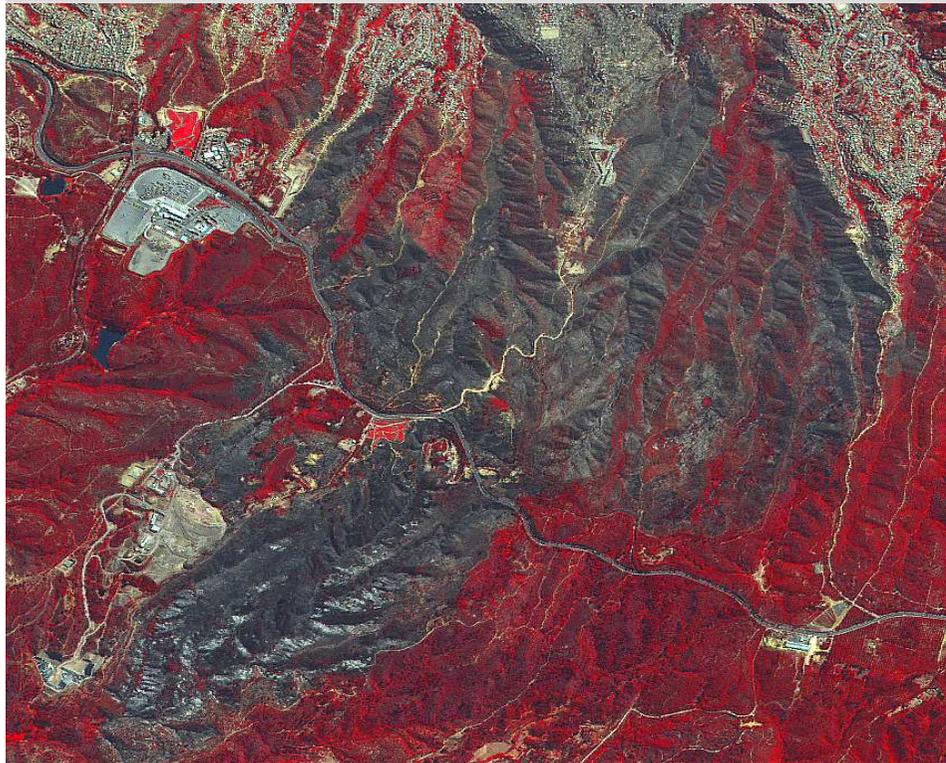


Valparaiso, 14th April, 2014, 12:08 local time

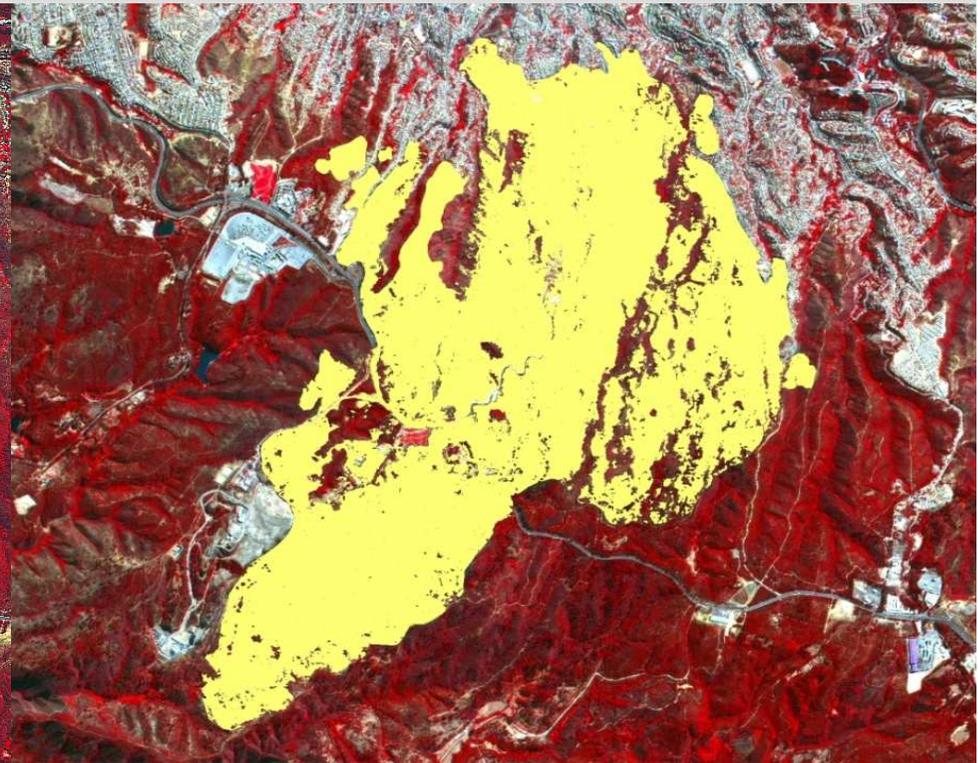


USES FOR FASAT CHARLIE

Valparaiso, Post-Fire analysis, False Color
14th April, 2014

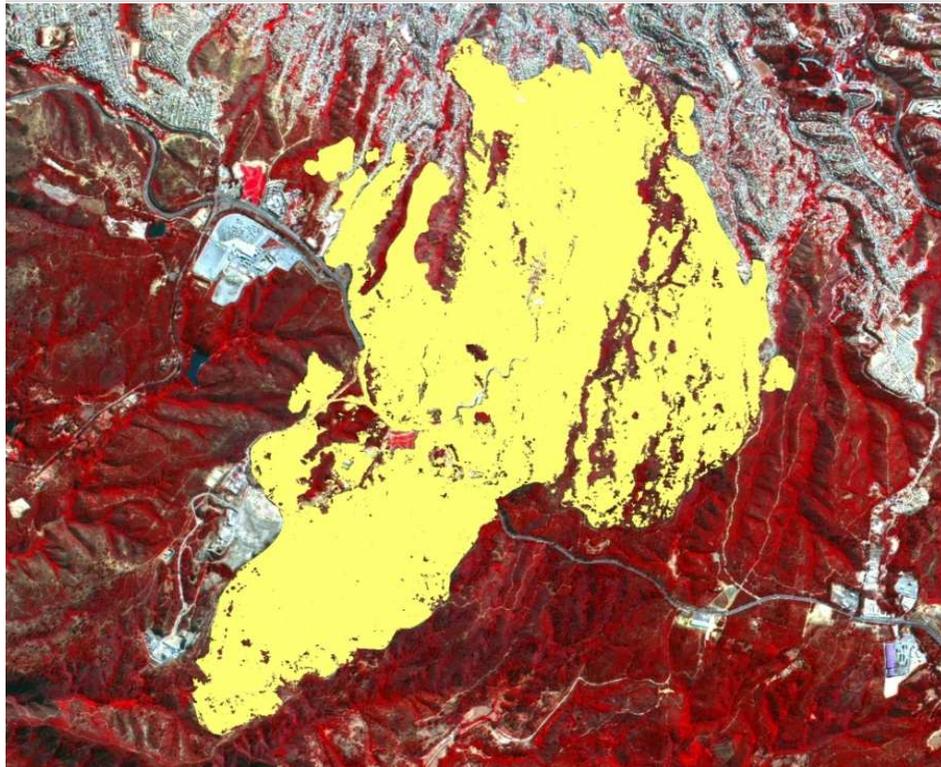


Spectral Detection of areas affected by fire
925 ha / 9.25 km²

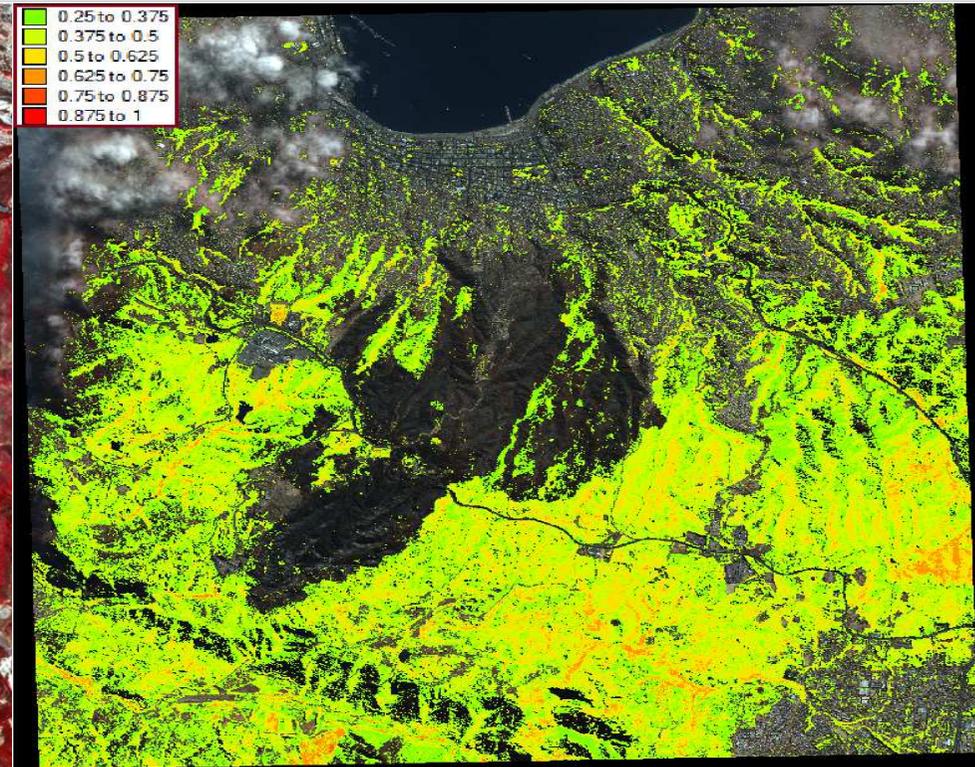


USES FOR FASAT CHARLIE

Spectral Detection of areas affected by fire
925 ha / 9.25 km²



NDVI, Dry Vegetation (green tones)
Healthy Vegetation (red tones)

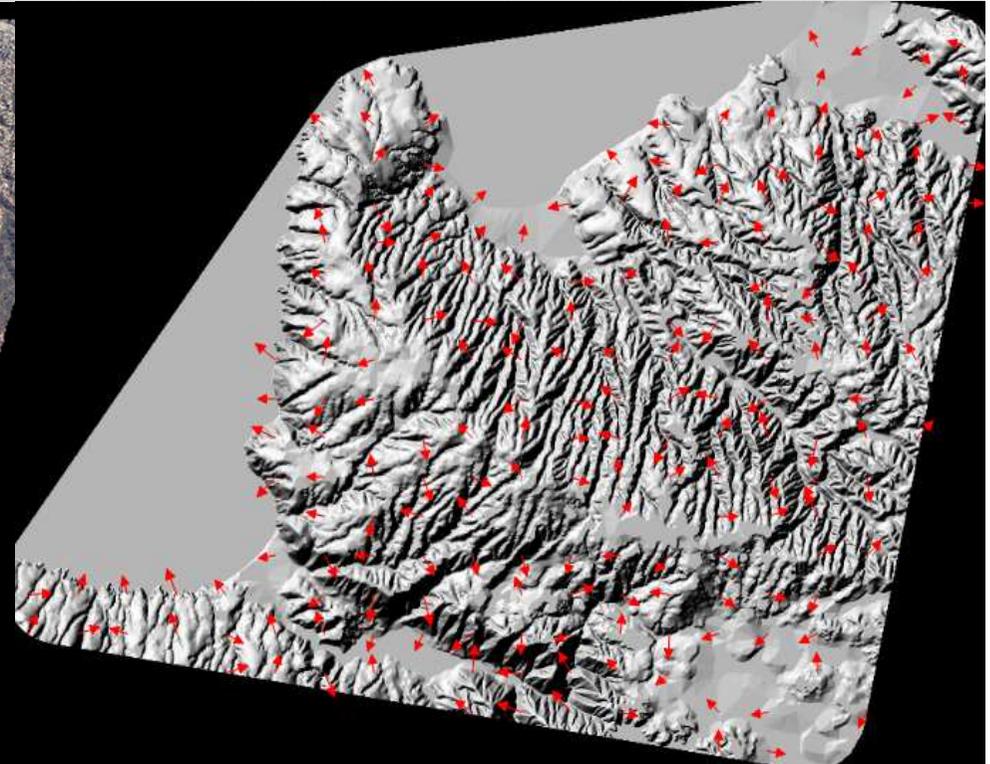


USES FOR FASAT CHARLIE

Valparaiso, Post-Fire analysis, FASat Charlie
14th April, 2014



Shadow model and DEM for surface's runoff estimation

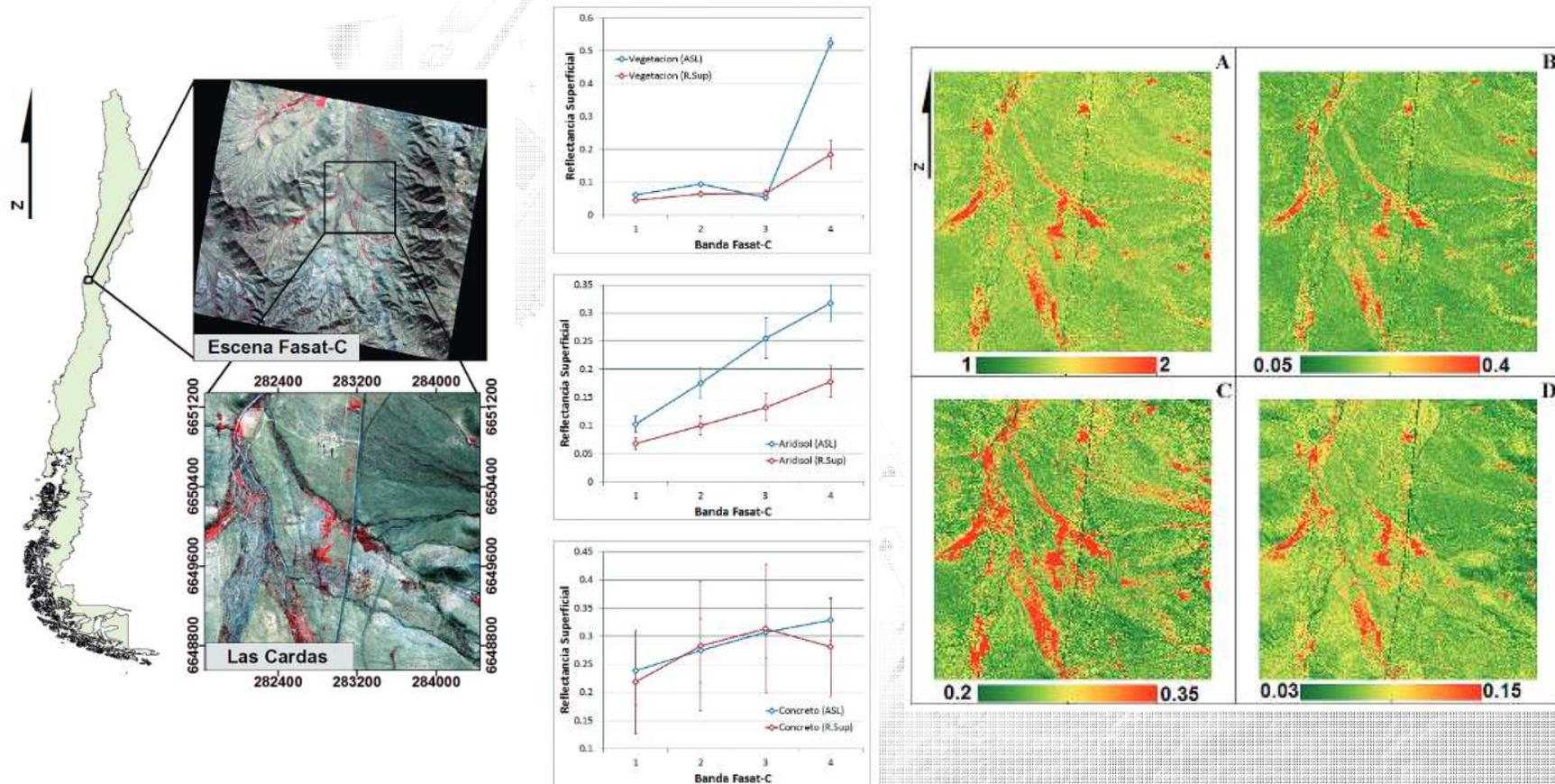


USES FOR FASAT CHARLIE

FIRST APPLICATION OF FASAT-CHARLIE IMAGERY FOR THE ASSESSMENT OF SEMIARID PRAIRIES IN CHILE

A. Santamaría-Artigas

University of Chile – Space Operations Squadron (Revista de Teledetección N°40 – December 2013, 78-87. ISSN:1133-0953)

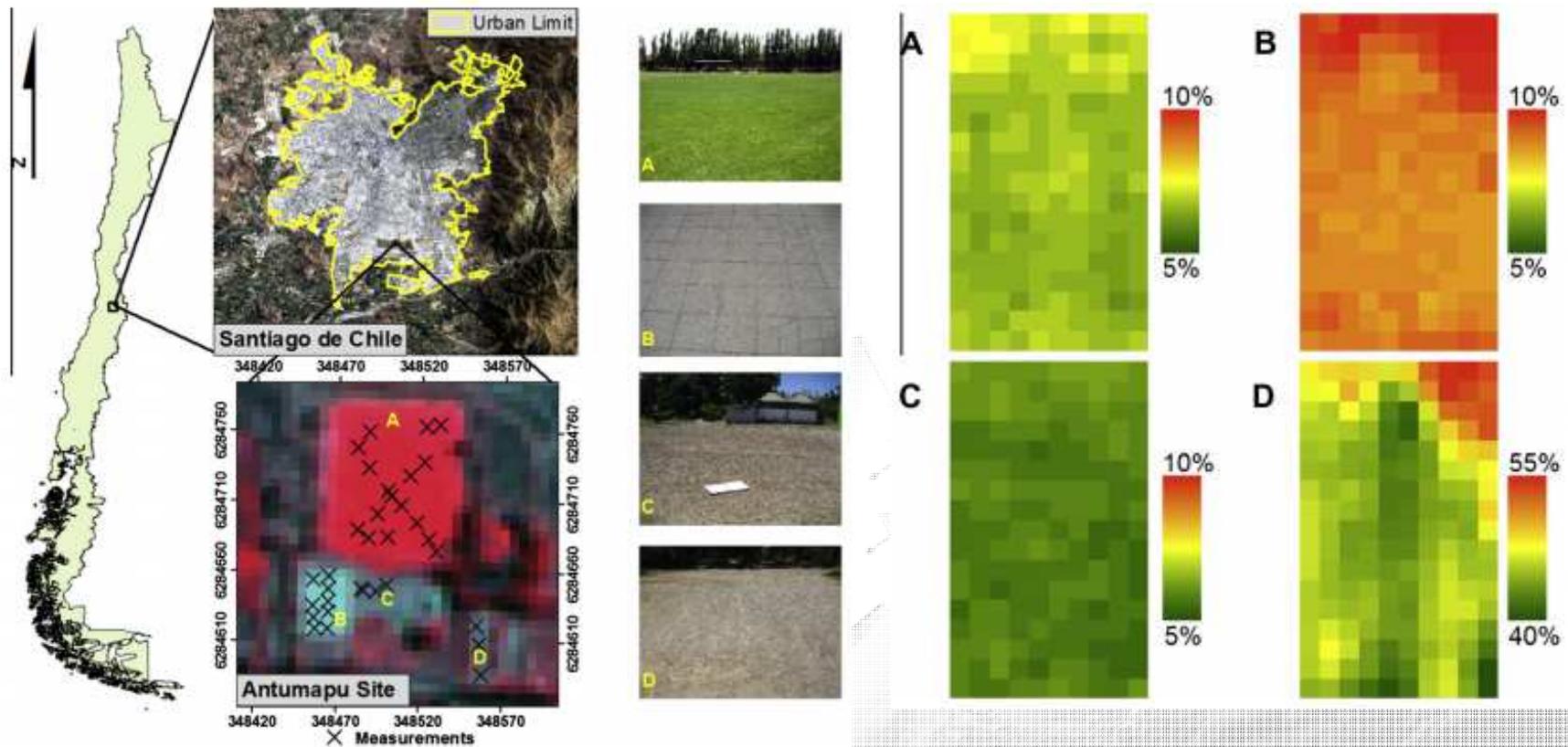


USES FOR FASAT CHARLIE

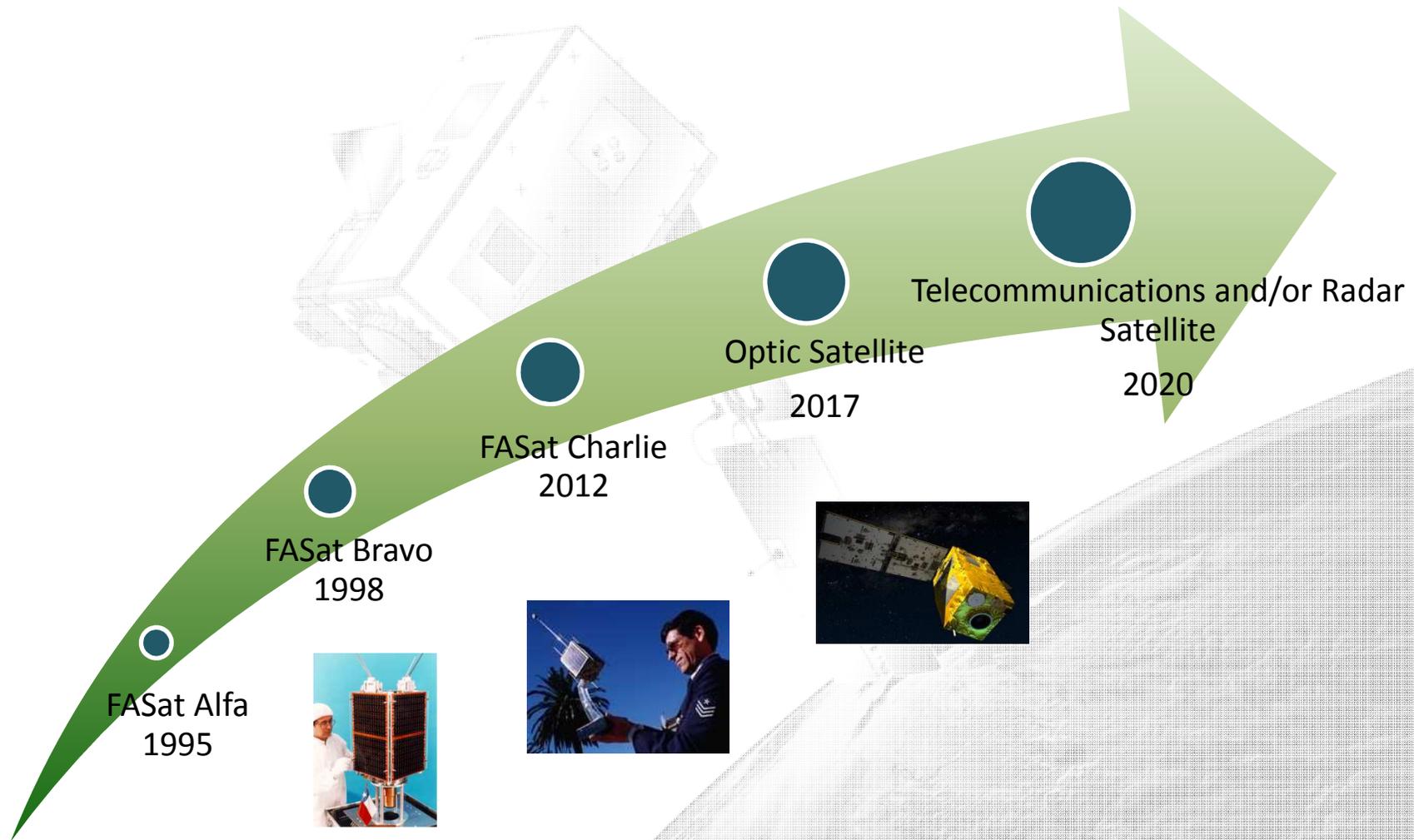
A FIRST IN-FLIGHT ABSOLUTE CALIBRATION OF THE CHILEAN EARTH OBSERVATION SATELLITE

C. Mattar

University of Chile – Space Operations Squadron (ISPRS Journal of Photogrammetry and Remote Sensing – 92 (2014) 16-25)



FUTURE DEVELOPMENT



CONCLUSION



FASat Charlie is a concrete contribution to the space capacity of Chile



The uses of FASat Charlie has been increasing since its operation



The future satellite development is essential to maintain and increase the space capacity of Chile



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