



Tribunal Nº 12

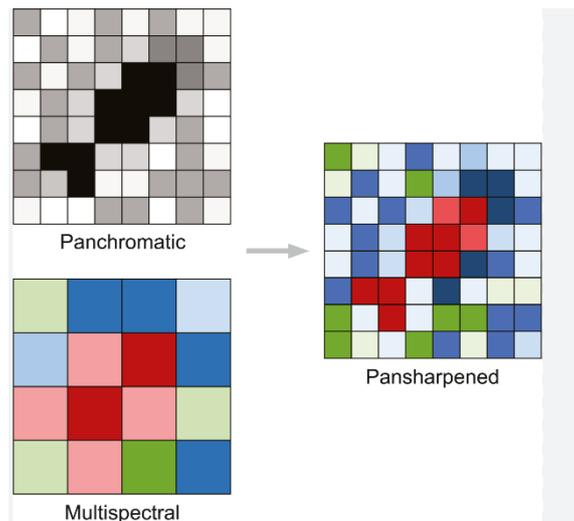
Área Global 9. Tecnología Aeroespacial, Naval y de Defensa

Especialidad T10 - Ciencia y tecnología desarrolladas con medios espaciales. INTA

Segundo Ejercicio de la fase de Oposición

SCENARIO 1 –

Panchromatic and multispectral image fusion, termed pan-sharpening, is to merge the spatial and spectral information of the source images into a fused one, which has a higher spatial and spectral resolution and is more reliable for downstream tasks compared with any of the source images.



Some basic methods for pansharpened that can be used as reference for this scenario are

- HSV Sharpening
- Gram-Schmidt
- Brovey transforms

You dispose of a LANDSAT 8 product in RGB bands with 30 m of resolution and 15 metres in the panchromatic,

LANDSAT 8 Band Designations

| | Bands | Wavelength (micrometers) | Resolution (meters) |
|-------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------|---------------------|
| Landsat 8 Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) Launched February 11, 2013 | Band 1 - Coastal aerosol | 0.43 - 0.45 | 30 |
| | Band 2 - Blue | 0.45 - 0.51 | 30 |
| | Band 3 - Green | 0.53 - 0.59 | 30 |
| | Band 4 - Red | 0.64 - 0.67 | 30 |
| | Band 5 - Near Infrared (NIR) | 0.85 - 0.88 | 30 |
| | Band 6 - SWIR 1 | 1.57 - 1.65 | 30 |
| | Band 7 - SWIR 2 | 2.11 - 2.29 | 30 |
| | Band 8 - Panchromatic | 0.50 - 0.68 | 15 |
| | Band 9 - Cirrus | 1.36 - 1.38 | 30 |
| | Band 10 - Thermal Infrared (TIRS) 1 | 10.60 - 11.19 | 100 |
| | Band 11 - Thermal Infrared | 11.50 - 12.51 | 100 |

Please, explain the process to implement **ONE** of any of the possible method to create pansharpened of LANDSAT 8.



PROCESO SELECTIVO PARA INGRESO, POR EL SISTEMA GENERAL DE ACCESO LIBRE, EN LA ESCALA DE TECNÓLOGOS DE LOS ORGANISMOS PÚBLICOS DE INVESTIGACIÓN. Resolución de 21 de febrero de 2023, de la Subsecretaría del Ministerio de Ciencia e Innovación (BOE núm. 47, de 24.02.2023)

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Página: 2 de 2

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Segundo Ejercicio de la fase de Oposición

SCENARIO 2 .

A team of INTA has developed an **innovative technology** for using a **laser source for space instruments** that is highly demand on different missions. For this reason, the team is assessing the possibility to create a spin-off of INTA, participated by INTA.

Explain the process to create this spin-off including the initial authorisation process at INTA and the further steps with the ESA-BIC Centre at Madrid.