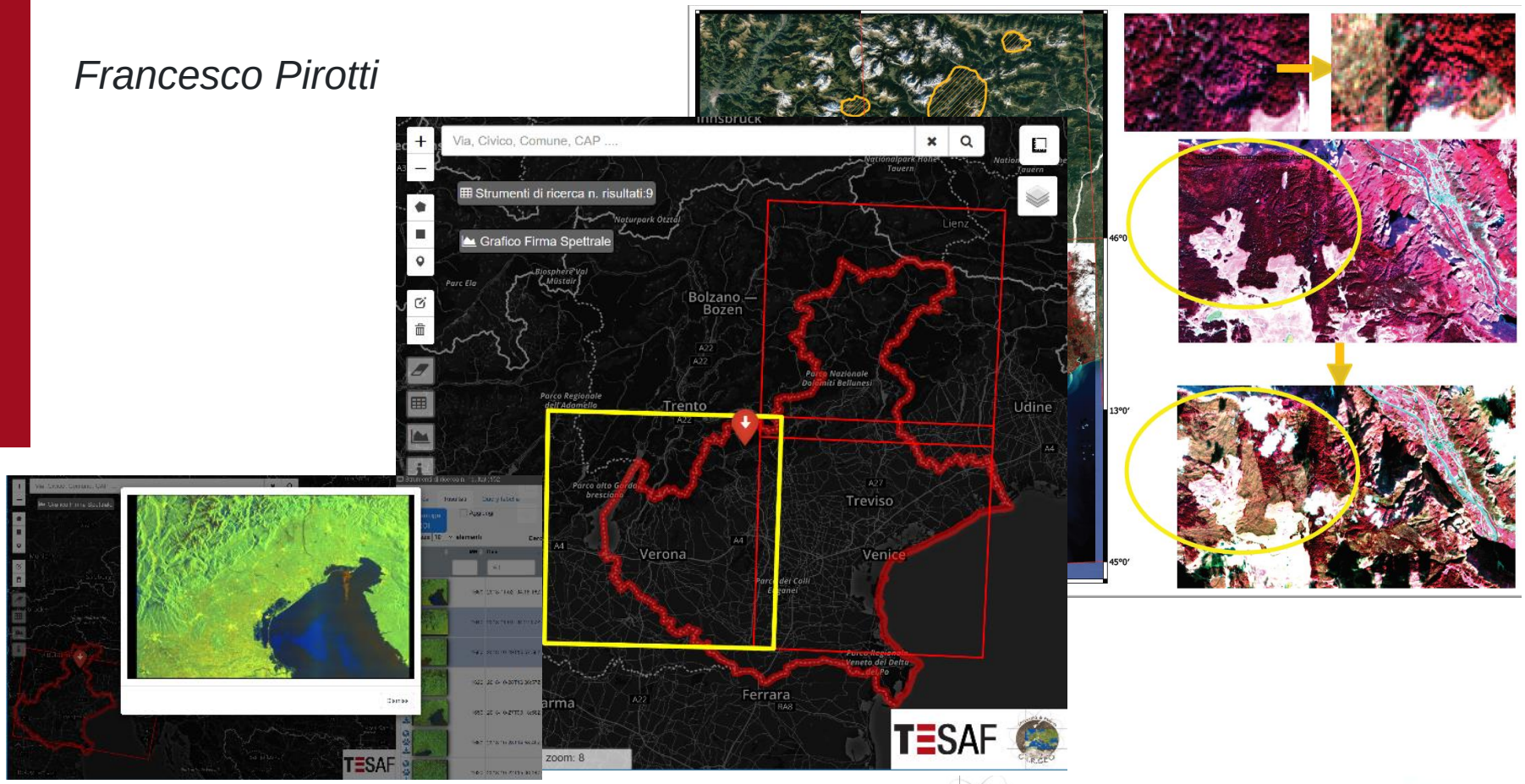
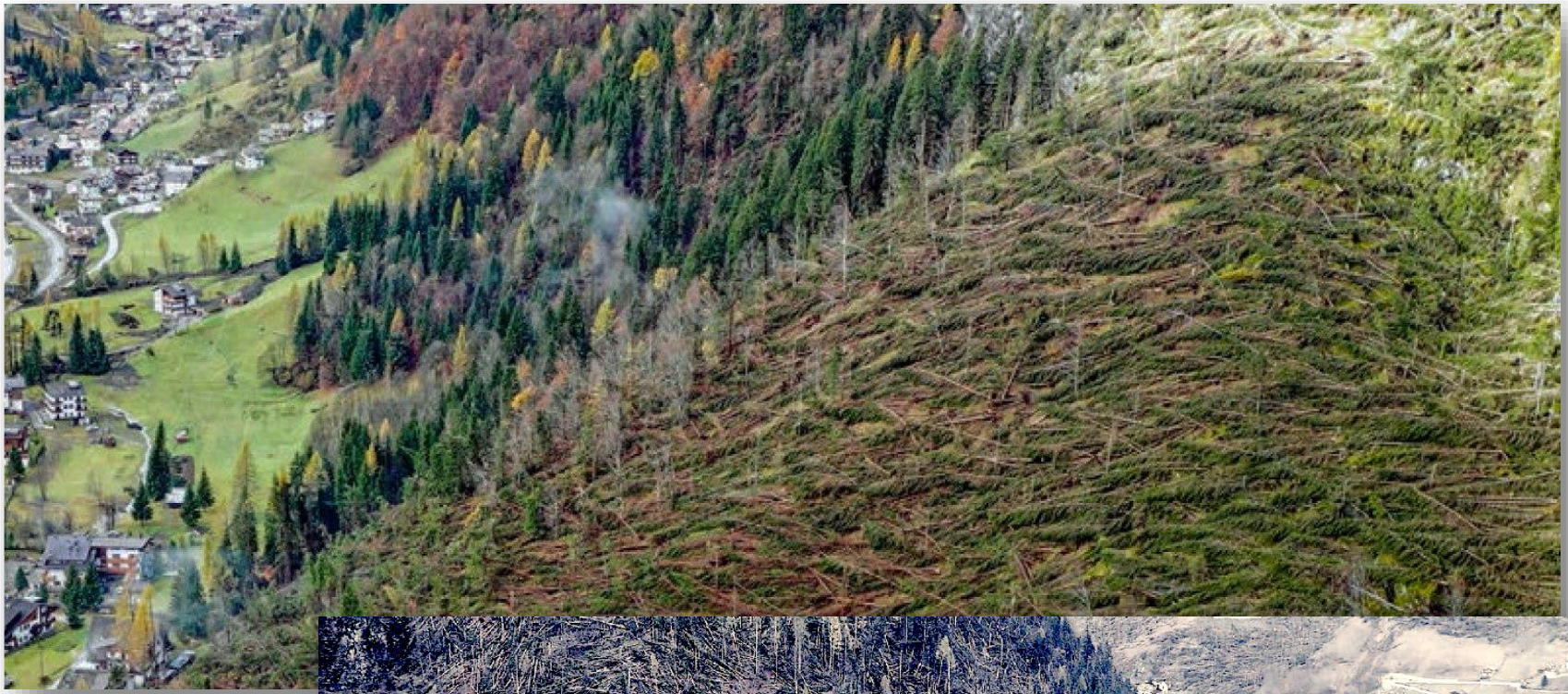
Il ruolo delle tecnologie di telerilevamento e GIS nel supporto alle operazioni di risposta all'evento VAIA

Francesco Pirotti



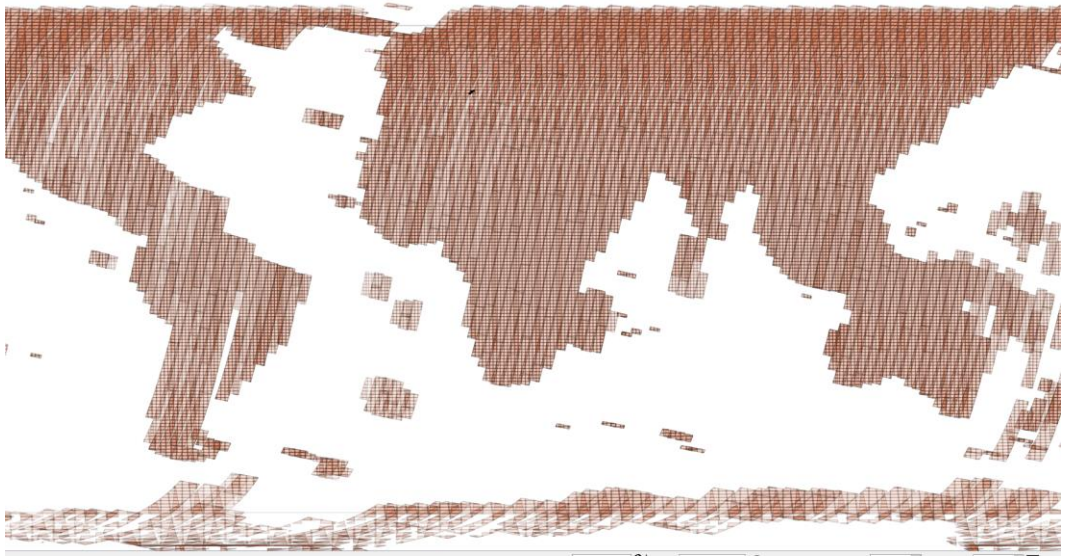


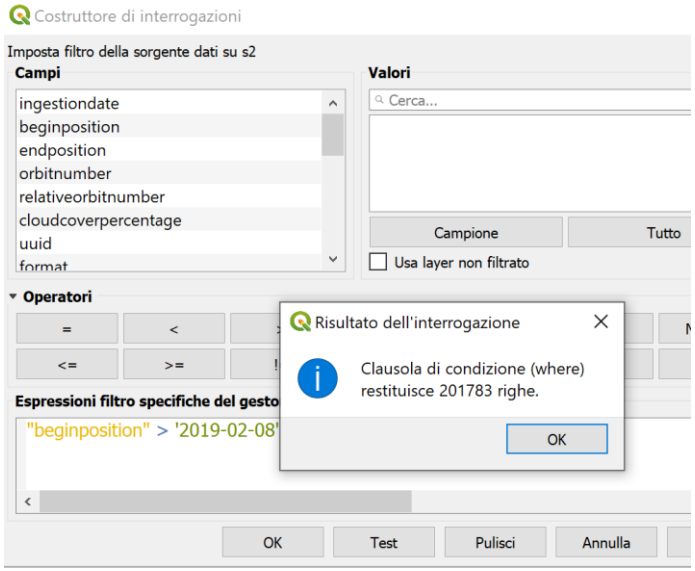
Geomatica per il territorio

- Telerilevamento
  - Ottico passivo
  - RADAR / SAR
  - Laser scanner
  - Fotogrammetria
- SIT / GIS

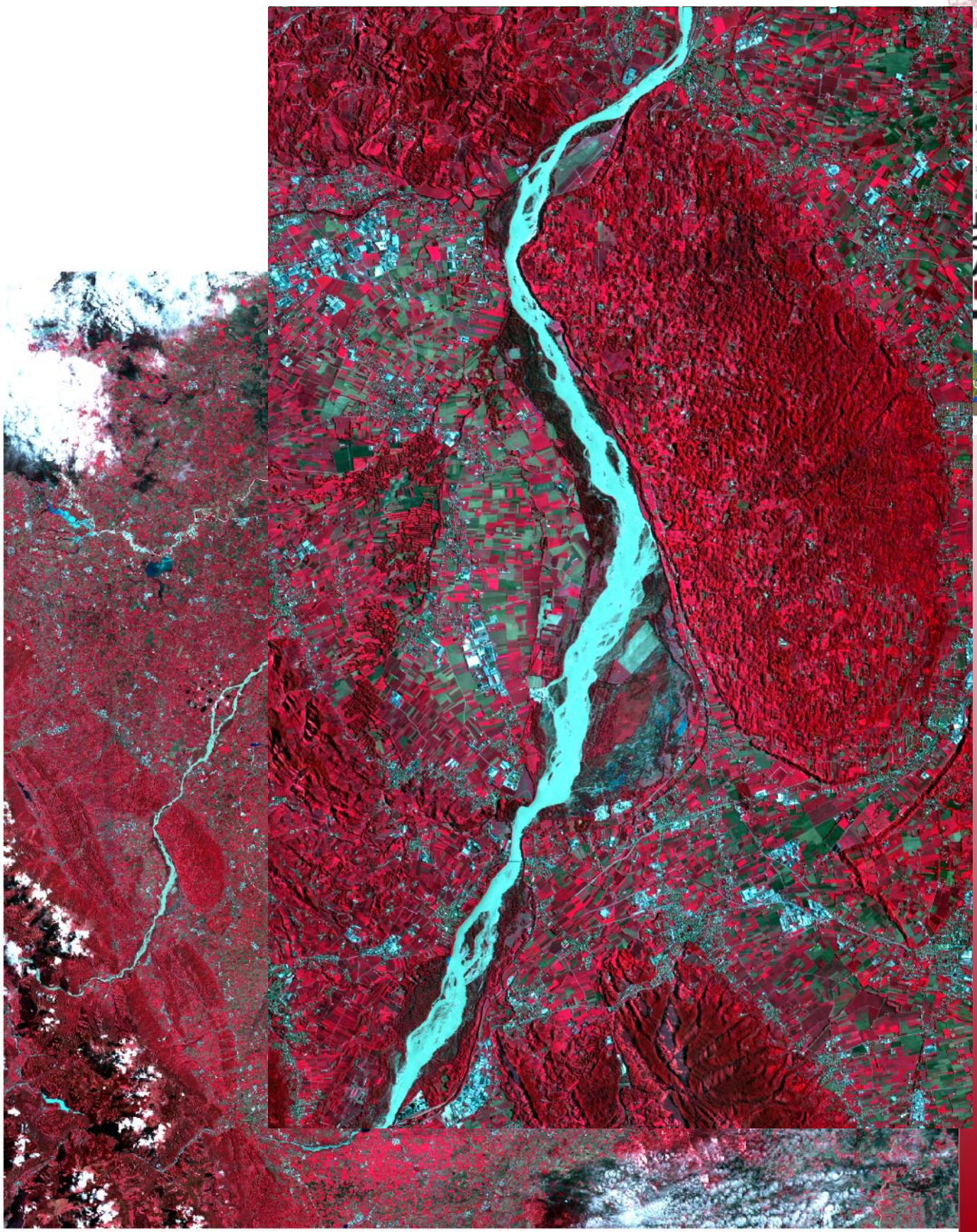
TELERILEVAMENTO

TELERILEVAMENTO



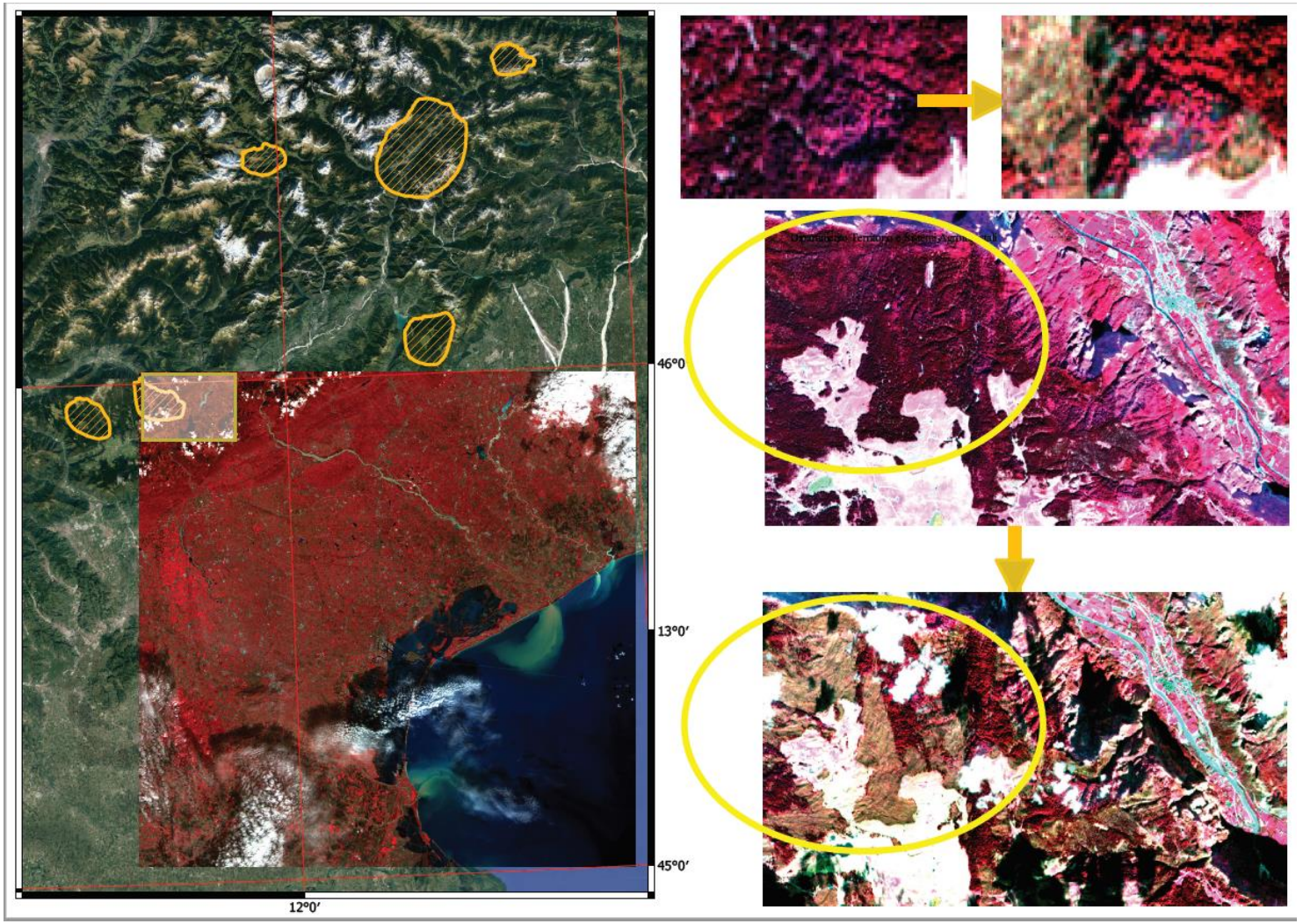


OTTICO PASSIVO

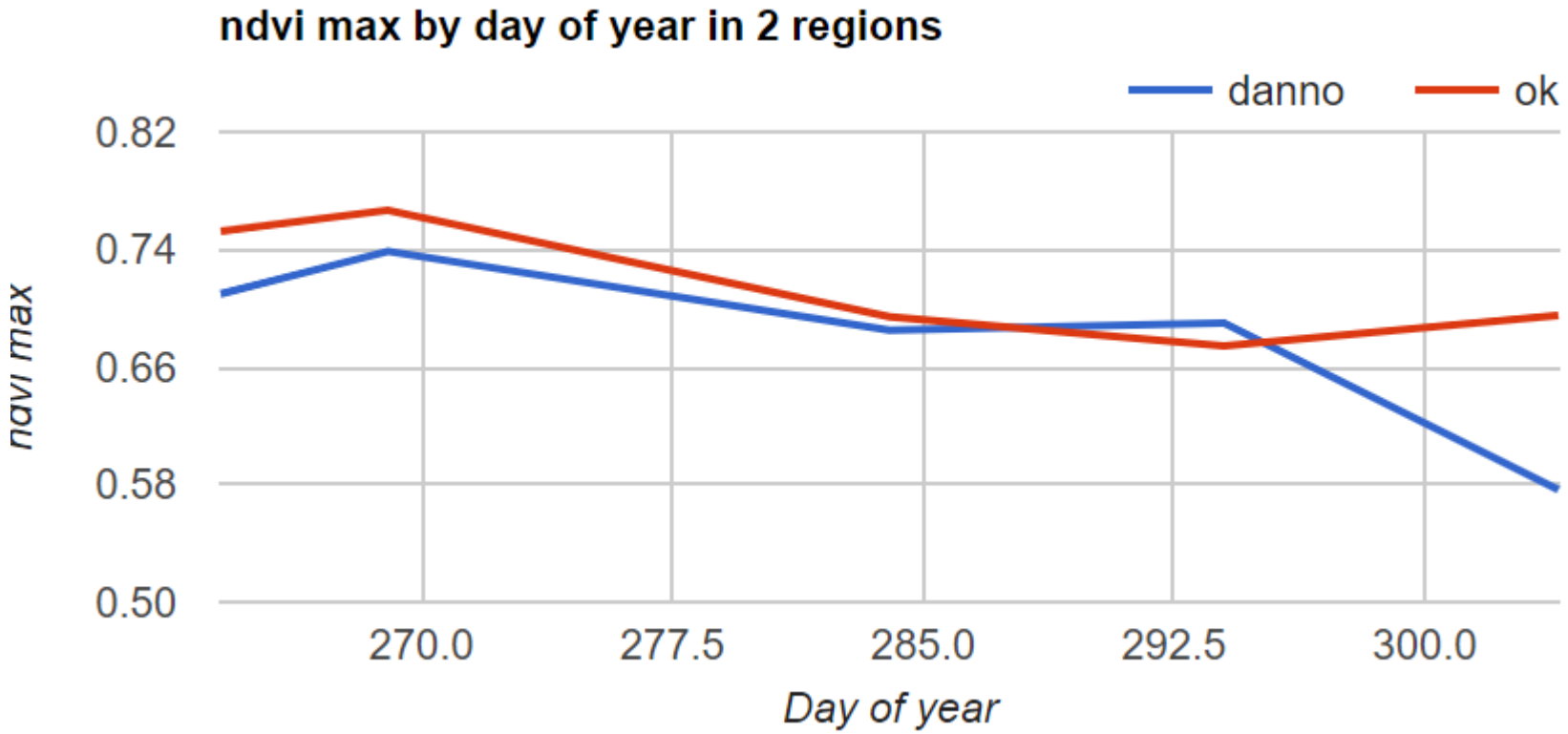


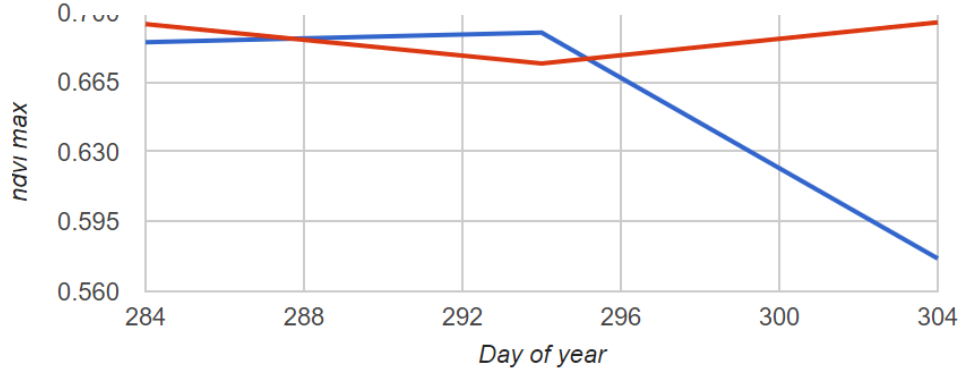
UNIVERSITÀ DEGLI STUDI DI PADOVA
Dipartimento Territorio e Sistemi Agro-Forestali
TESAF
CIRGEO

VAIA: identificare e quantificare

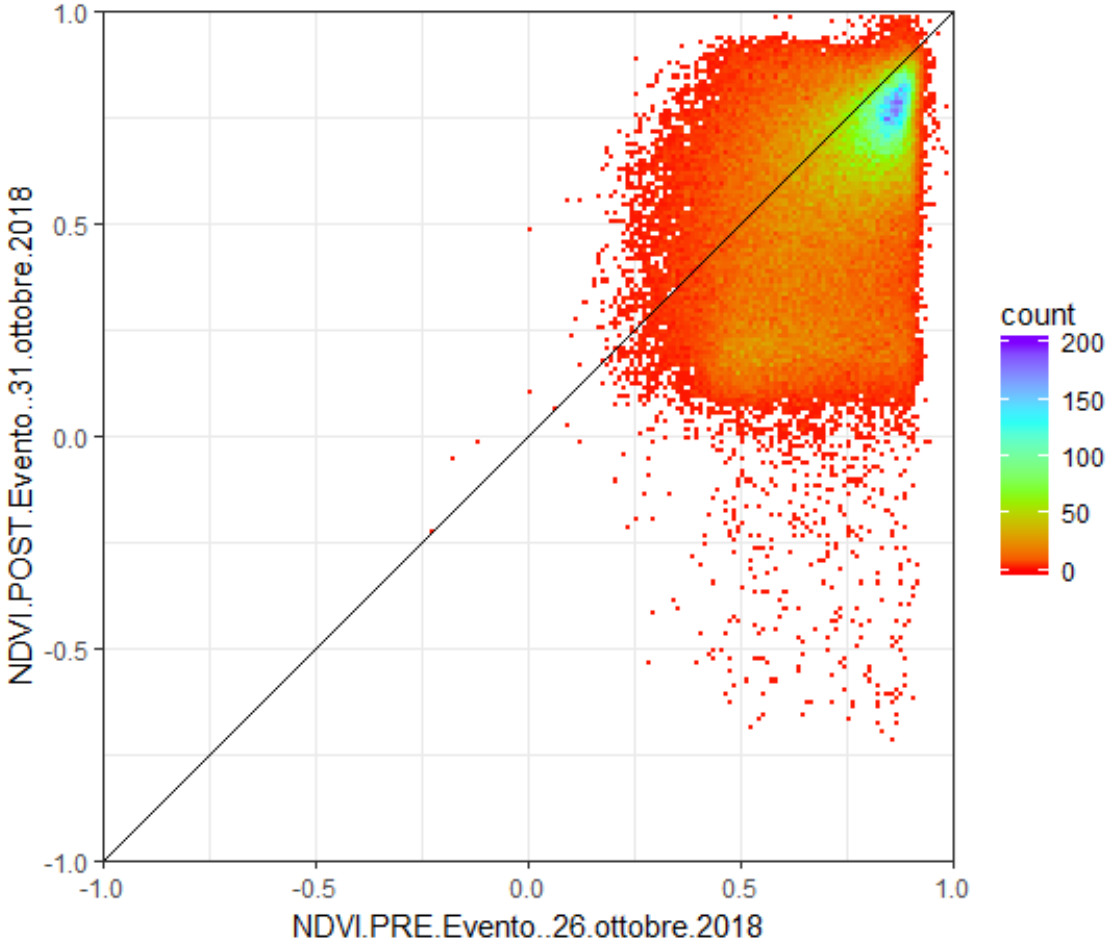


VAIA: identificare e quantificare





VAIA: identificare e quantificare

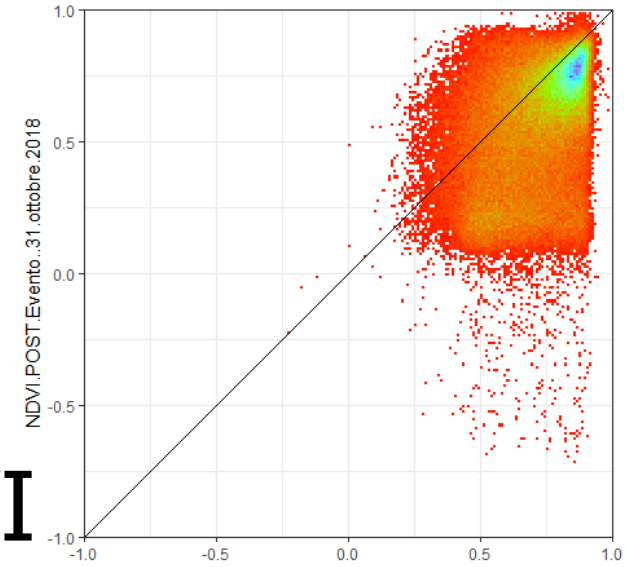


Sentinel 2 NDVI

Pre-elab: mask snow, cloud e SCL classe vegetazione

VAIA: identificare e quantificare

Calo NDVI
area Marcesina

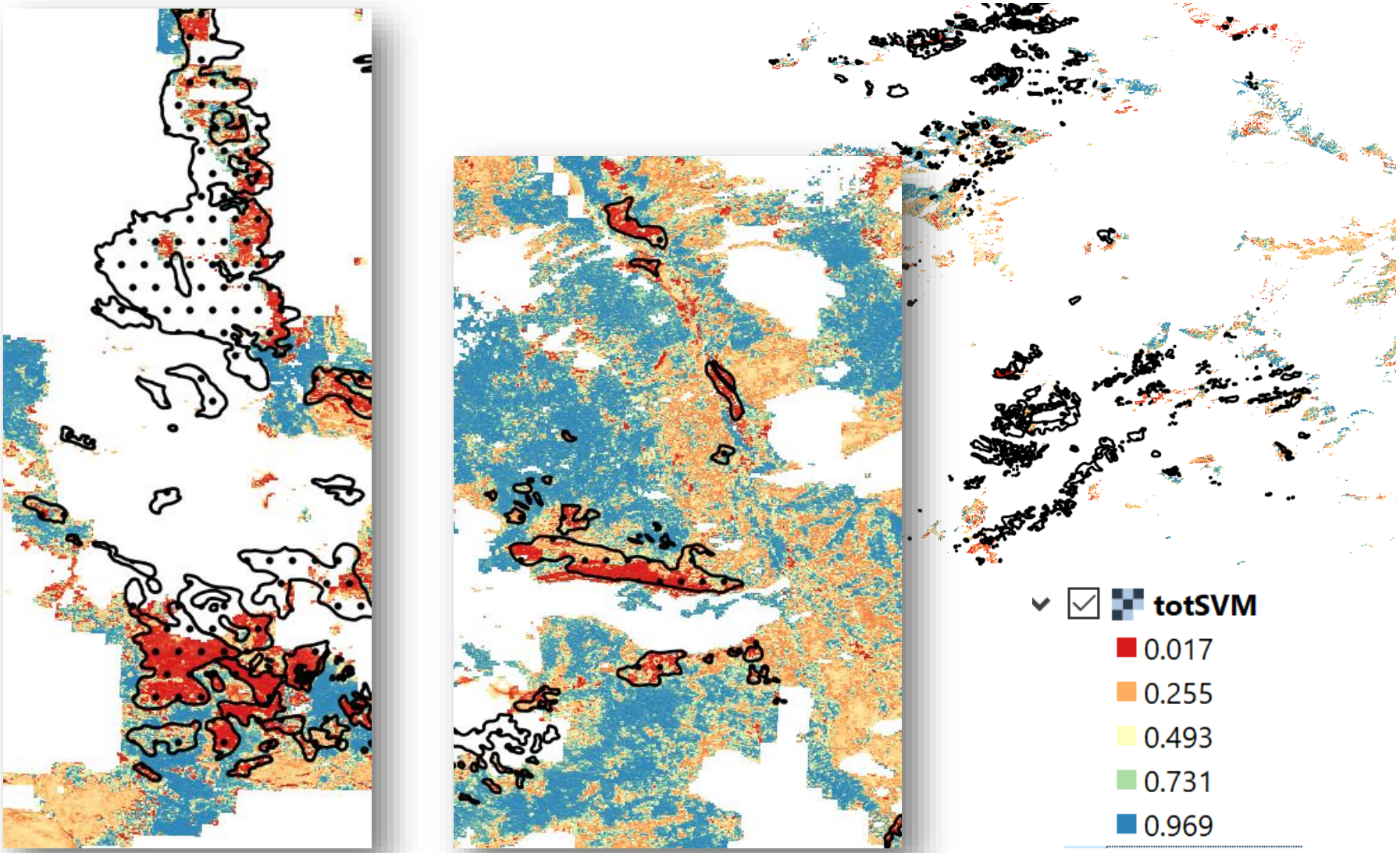


Calo NDVI fisiologico

Sentinel 2 NDVI

*D'Este, M., Pirotti, F., 2017. Stima della proporzione di specie forestali decidue sfruttando NDVI. *XXI Conferenza Nazionale ASITA*, 417–424

VAIA: identificare e quantificare

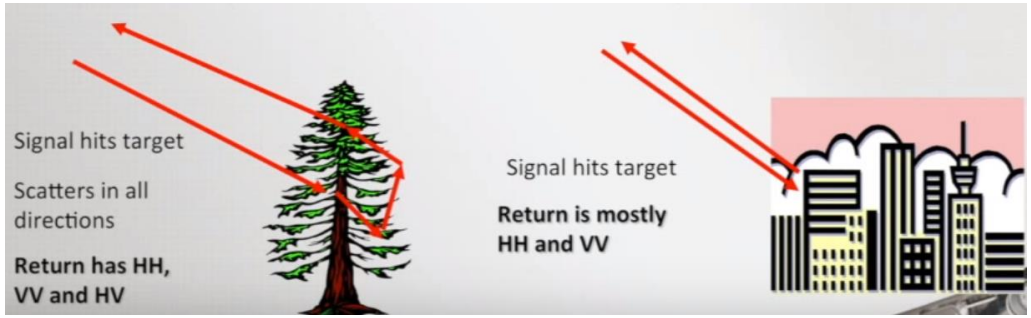


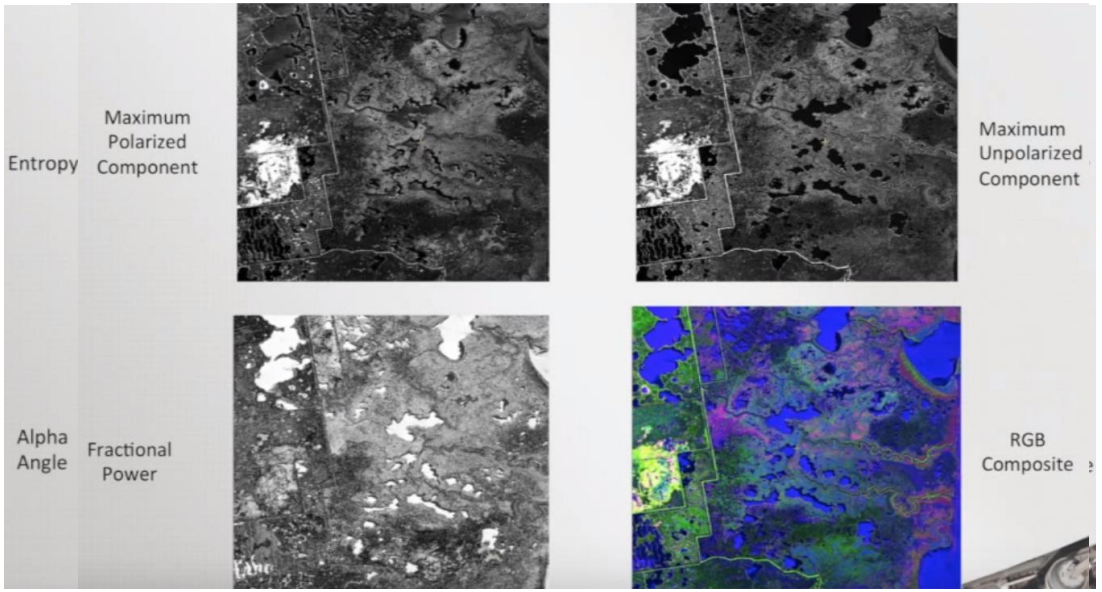
SAR RADAR

2 «classi» di utilizzo

- Deformazioni (mm) – interfermetria (Δfase)
- Backscatter segnale + polarizzazione + Δcoherence …

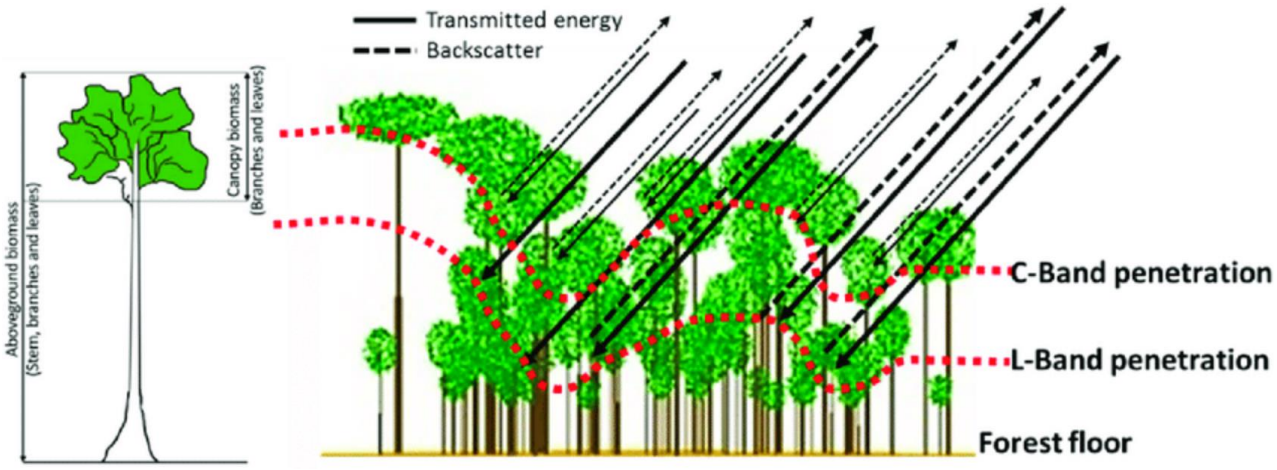
Courtesy of PCI Geomatica



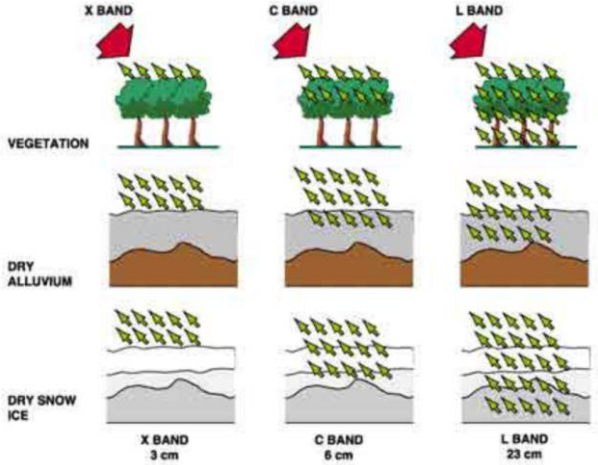


Courtesy of PCI Geomatica

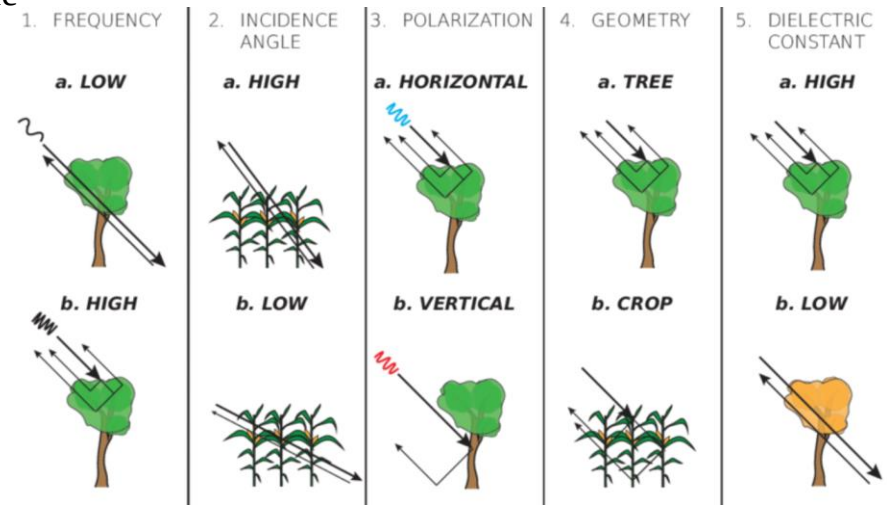
SAR RADAR



Courtesy of ESA Earth Online

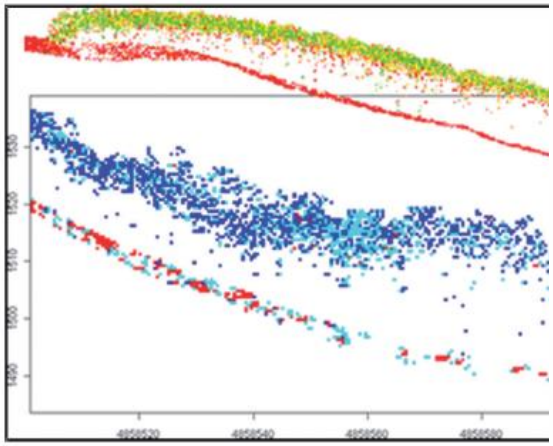


Courtesy of ESA Earth Online

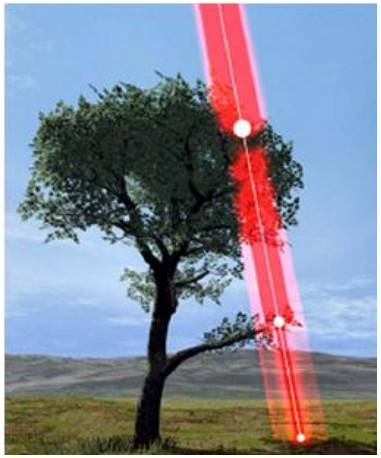


Courtesy of Tim van Emmerik, 2017.
Water stress detection using radar.

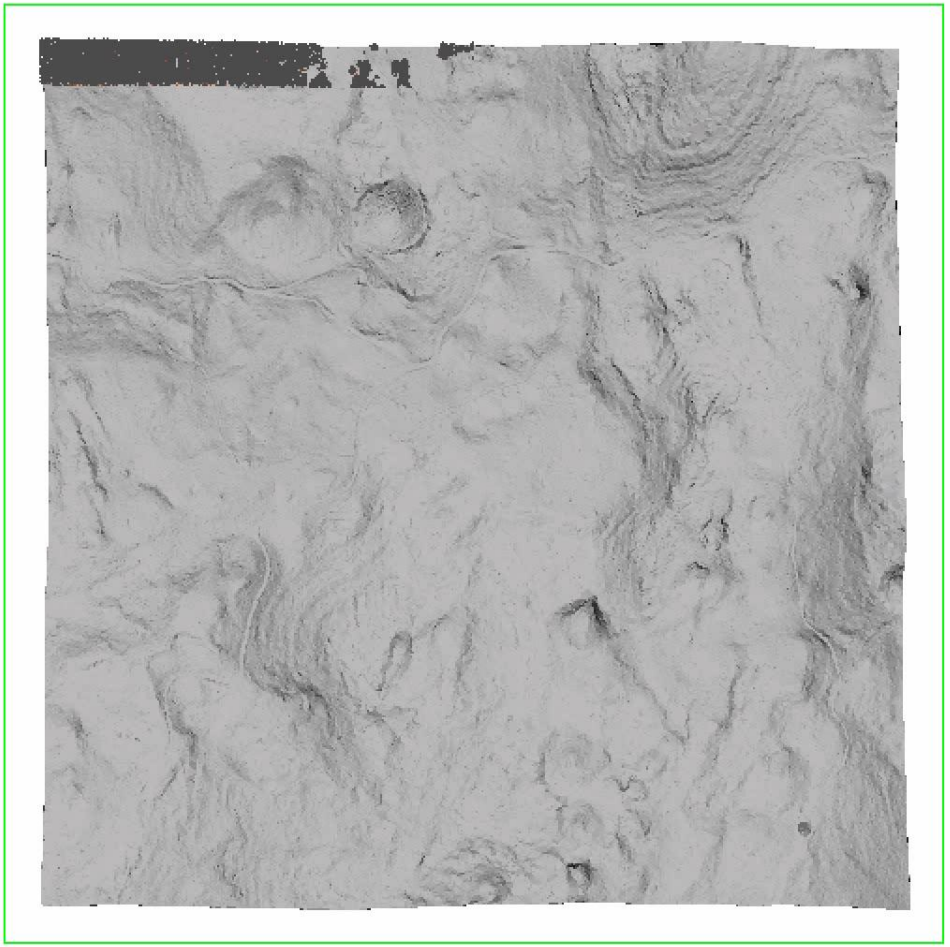
Lidar



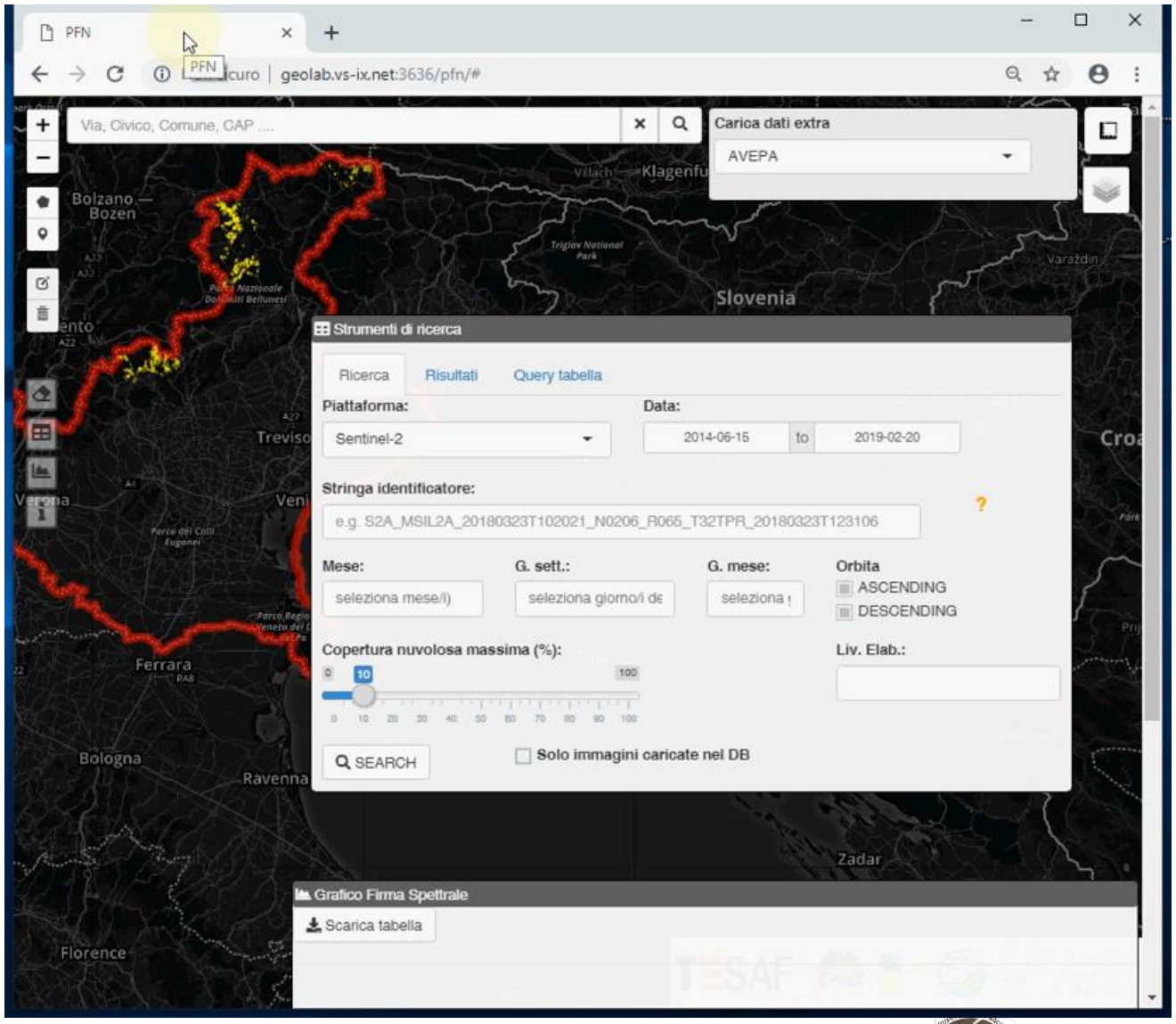
Pirotti, F., Grigolato, S., Lingua, E., Sitzia
Environmental Sciences. *Italian Jou*



Courtesy of Jan Skaloud
École Polytechnique Fédérale de Lauanne



VAIA: identificare e quantificare



VAIA: identificare e quantificare

- Aree definite con telerilevamento
- Validazione con aree rilevate a terra
- Inserimento in contesto GIS per supporto alle decisioni mediante analisi geospatial:
  - Logistica
  - Scenari di aumento rischio (valanghe ARPAV)
  - Monitoraggio interventi con web-gis
  - Dati aggregati e distribuiti sul territorio (volume per comune, ranking comuni più impattati etc…)

VAIA: identificare e quantificare