PyroLife Innovative Training Network

Earth Observation Workshop 18-20th October

Presenting: Fiona Newman Thacker

My background and work in PyroLife

- Background in physical geography (BSc) and Risk (MSc) at Durham University – UK.
- Masters thesis and consequent publication – '**Investigating the drivers of the unprecedented Chernobyl Power Plant Wildfire in April 2020 and its effects on 137Cs dispersal**'
- EO products were vital, e.g.

  CAMS (smoke plume height)

  MODIS burned area (historical fire regime)

  ERA5-LAND (climatic/weather influence)

  Historical fire danger indices for FWI

- Within PyroLife, concentration on '**fire resilient landscapes**' at Wageningen University.

  How can we define such a landscape? What spatial characteristics make a landscape fire resilient?

What is PyroLife?

Designed and co-ordinated by Dr. Cathelijne Stoof (Wageningen University and Research)

Training 15 ESR's in integrated fire management.

Covering both environmental and social aspects of fire.

Transferring knowledge from the south of Europe to the north.

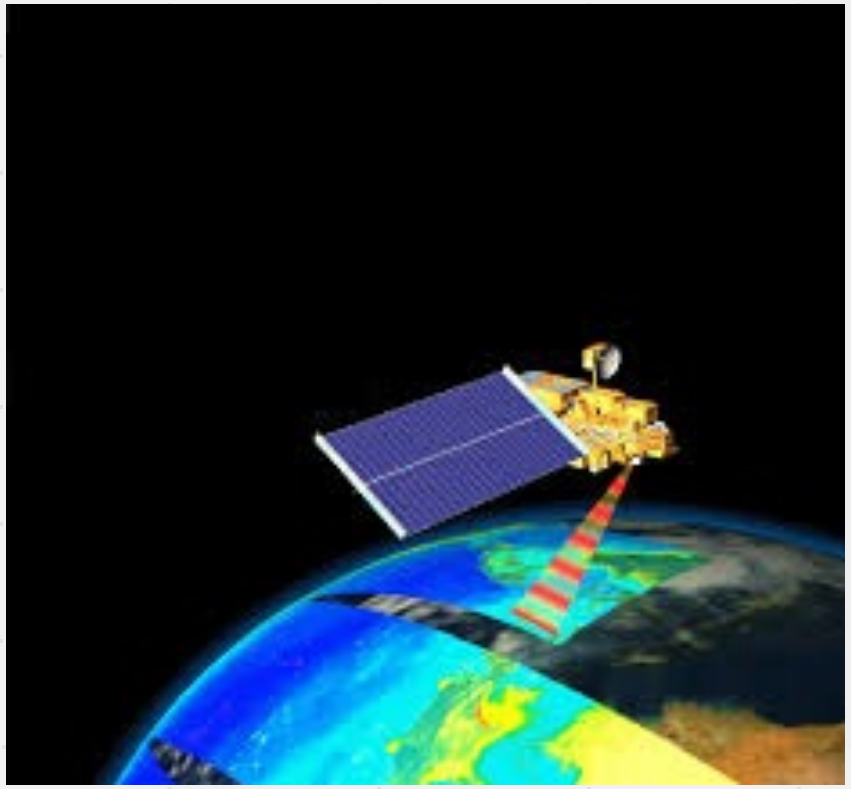
Linking science and practice.

Why does PyroLife need EO products?

- PyroLife is an interdisciplinary program.
- Working across sectors, including remote sensing, is one of the aims of the network.
- Allows cross-geographical research to be facilitated.
- Field work constrained due to COVID challenges in first year of project.
- EO data is often essential for modelling.

Diagram from 'Living with fire and the need for diversity', Stoof, C., & Ketteridge, N., (2022), Earths Future

Which datasets?



MODIS/VIIRS → Processed burned area

Landsat 8

Sentinel 2 & 3

LiDAR → PREVINCAT (Catalonia)

Reanalysis data, including ERA5-LAND

Corine Land Cover

What does PyroLife use EO data for?

- **Fire detections** for fire spread & behaviour in correlation with land cover (Tomás Q)
- **Vegetation indices** for phenology analysis pre/post fire (Tomás Q)
- **Understanding** the impact of landscape features on fire cessation (myself)
- **Landscape controls** on fuel moisture content variability for fire danger (Kerryn Little)
- **Risk assessment** maps on a landscape scale (Pooja Pandey)

Limitations/Needs

- Burned area products at a higher resolution than MODIS can currently offer --> Difficulty in discerning small fires in temperate regions.
- Highly fragmented landscape in some areas of Europe (e.g. the Netherlands) and difficulties in detecting fire scars.
- A way of incorporating energy measurements aboveground --> smouldering fires
- Patchy Sentinel coverage in some areas of the world, e.g. Cyprus

Thank you for listening!

PyroLife conference: 14-16th March 2023, Barcelona

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