SESSION 2: ADDRESSING CLIMATE CHANGE CHALLENGES

PANEL 2.1: Adaptation: Climate smart agriculture, water cycle and emergency preparedness

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Ana Navas manages the Gamma Lab and the Research Group on Erosion and Soil and Water Evaluation at the Estación Experimental de Aula Dei; she is a pioneer in the application of radionuclides (FRNs and ERNs) as indicators of environmental processes associated with glacial retreat under conditions of climate change in polar and high mountain regions

PANEL 2.1 Adaptation

Climate smart agriculture, water cycle and emergency preparedness

Climate change and land degradation: The role of nuclear and isotopic techniques

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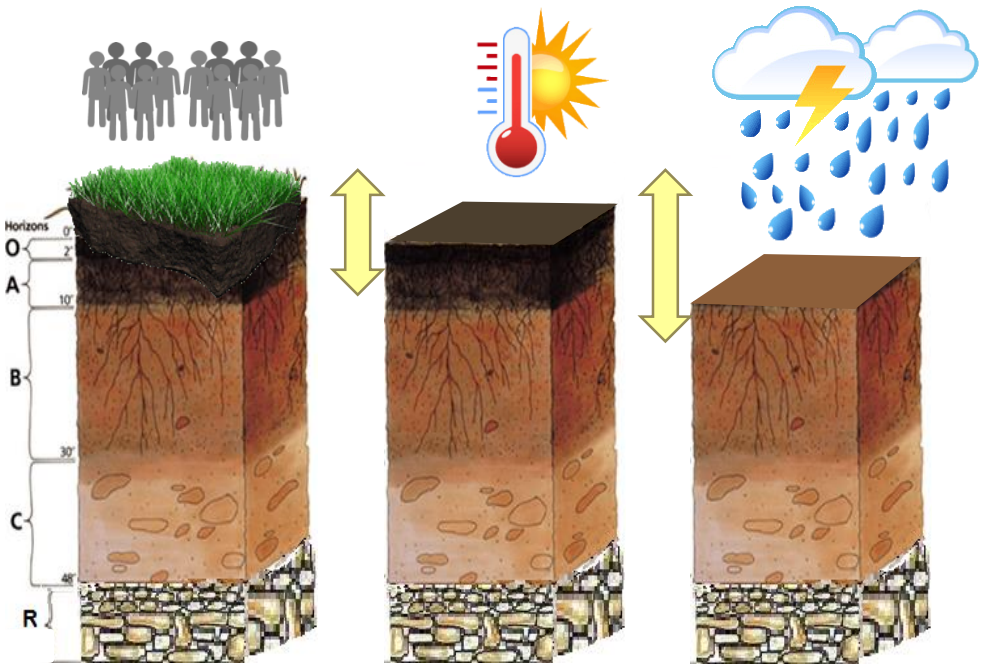
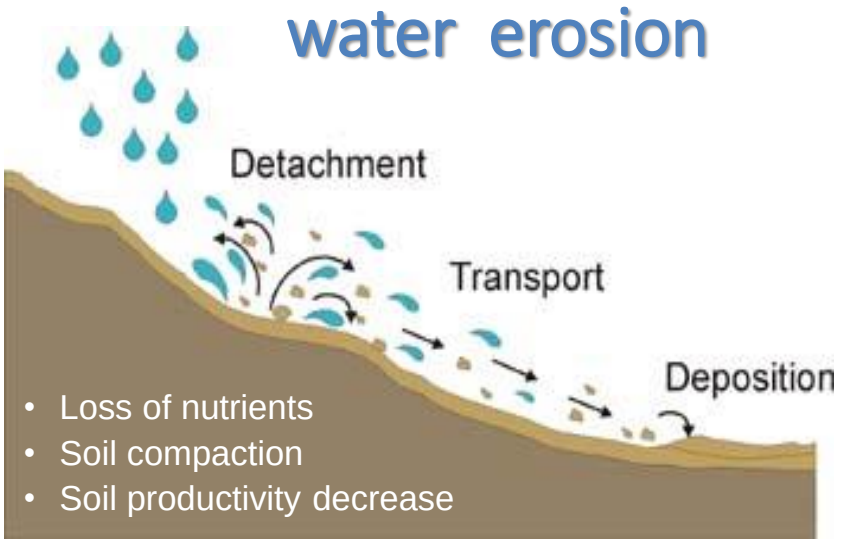
IAEA International Atomic Energy Agency *Atoms for Peace and Development*

Climate Change threats Soil





TOLERABLE soil loss **1.4 t ha^{-1} yr^{-1}**

Verheijen et al., 2009

PREVENT DEGRADATION
REDUCE EROSION
PRESERVE SOIL

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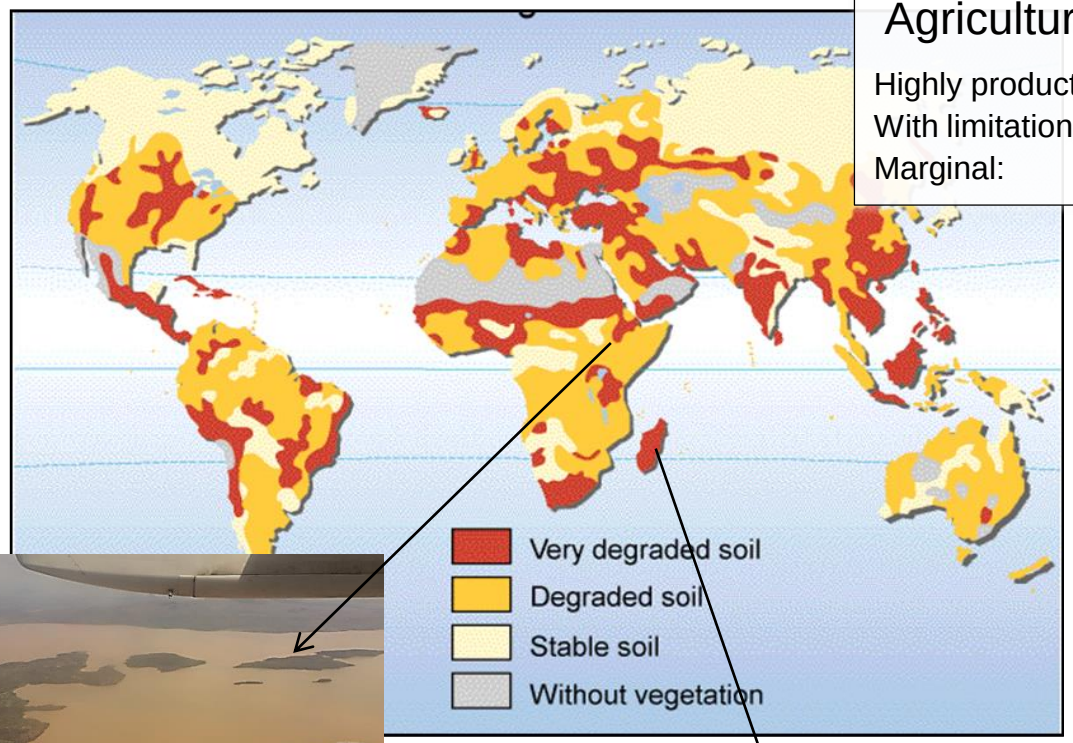
Soil Degradation in the World



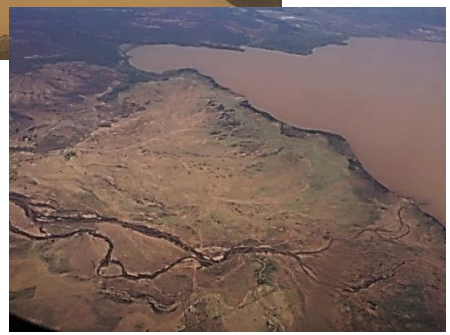
Agricultural soils

Highly productive:	3 %
With limitations:	78 %
Marginal:	19 %

Impacts

- Water quality
- Siltation water bodies

  Sediments – Nutrients – Contaminants



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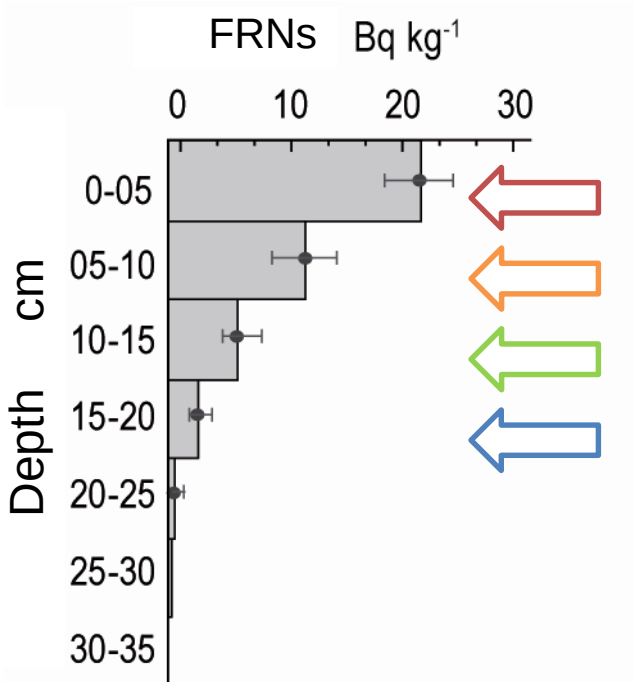
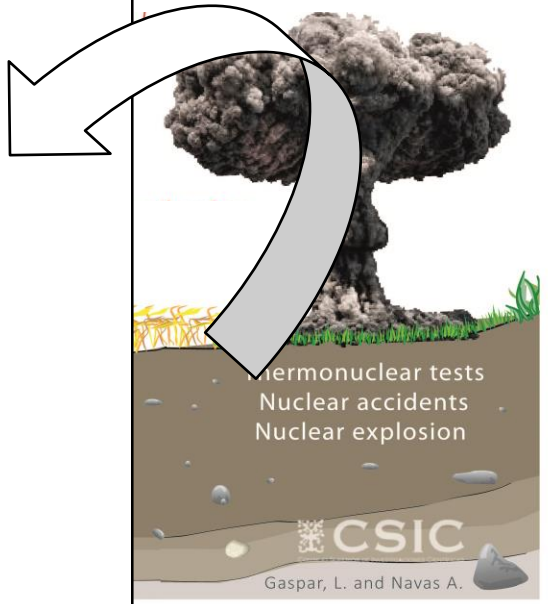
Nuclear and Isotopic techniques:

Gamma emitting radionuclides (FRNs) - CSSIs

Soil Sampling

Gamma Spectrometry





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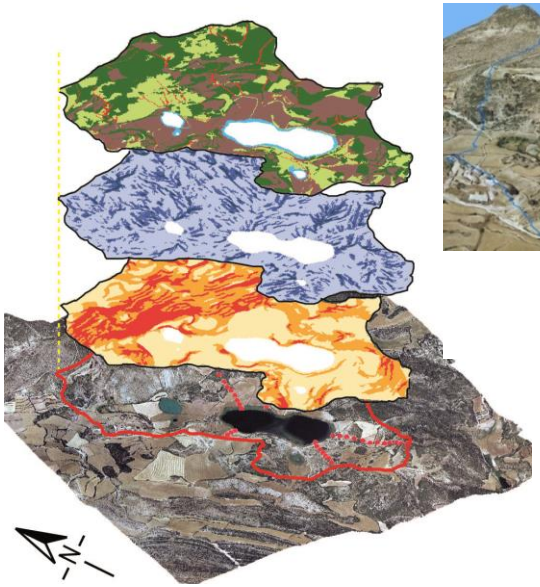
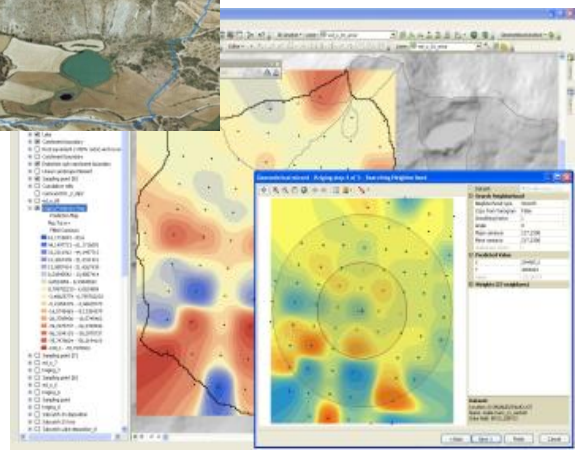
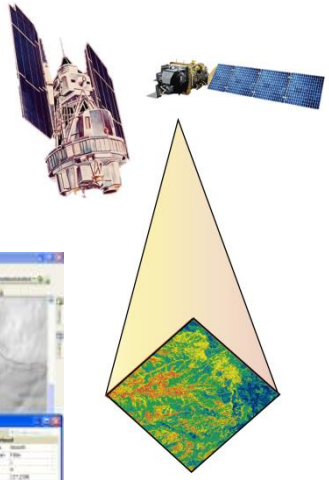
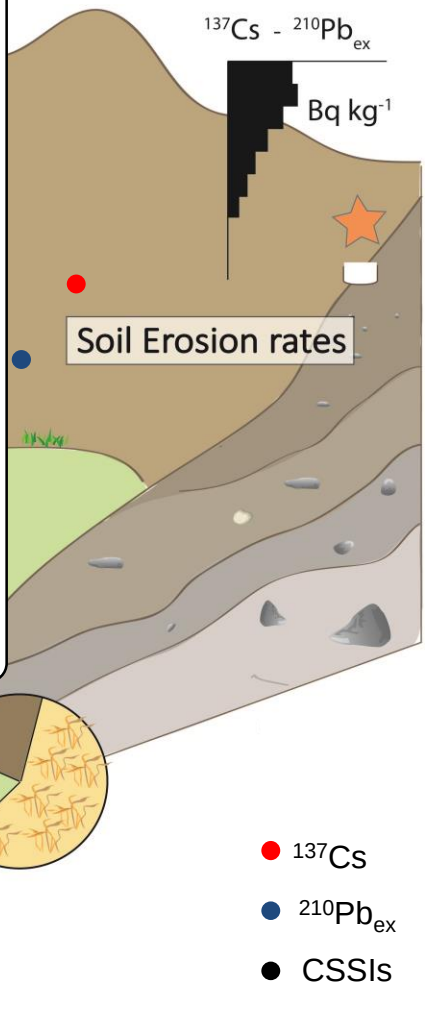
Conceptual - Applications

GIS, Teledetection, Modelling









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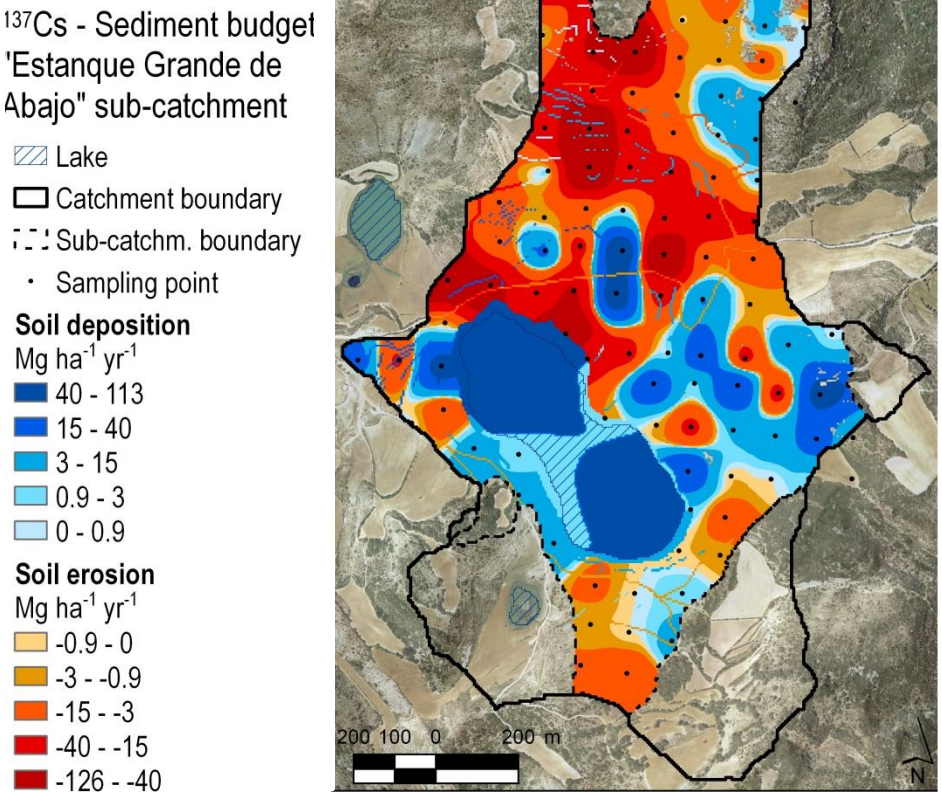
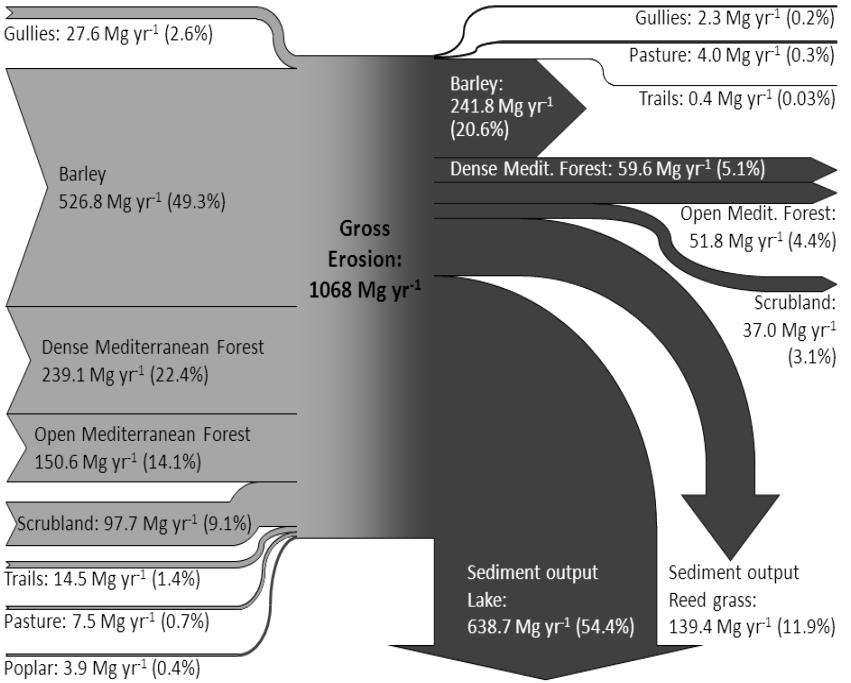
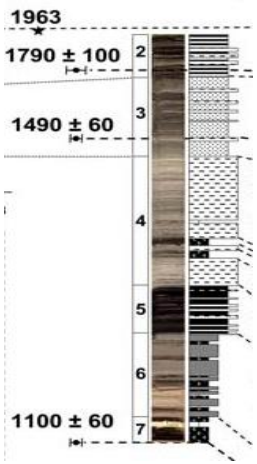
Soil Erosion and Deposition Rates

Quantifying with ^{137}Cs







Navas, A., et al. 2014. Science of the Total Environment, 496: 132-143

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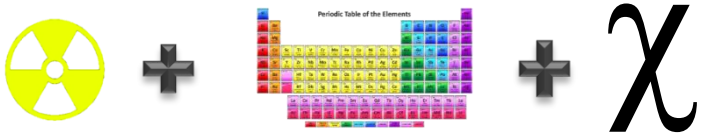
Identifying Sediment Provenance

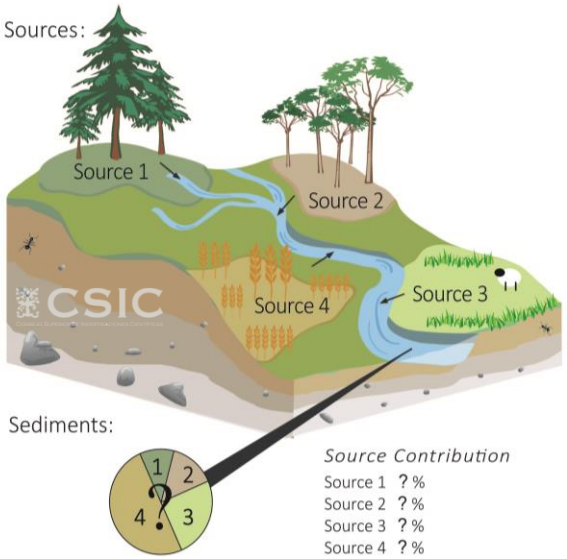
Fingerprinting

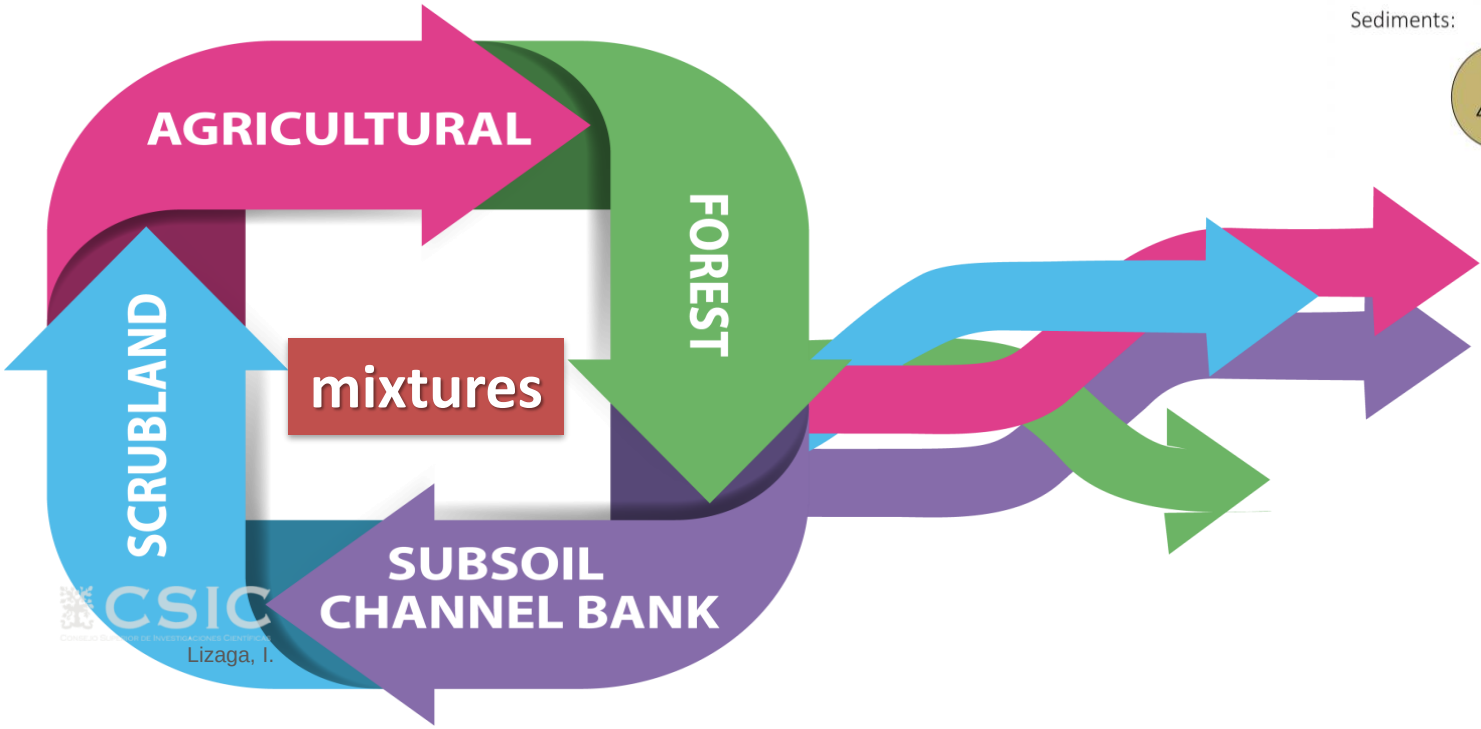
FingerPro

unmixing model

https://github.com/eead-csic-eesa/fingerPro







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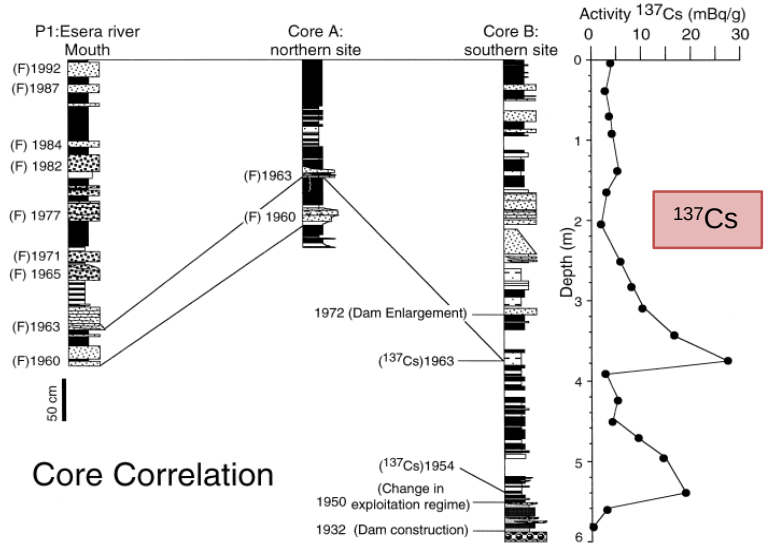
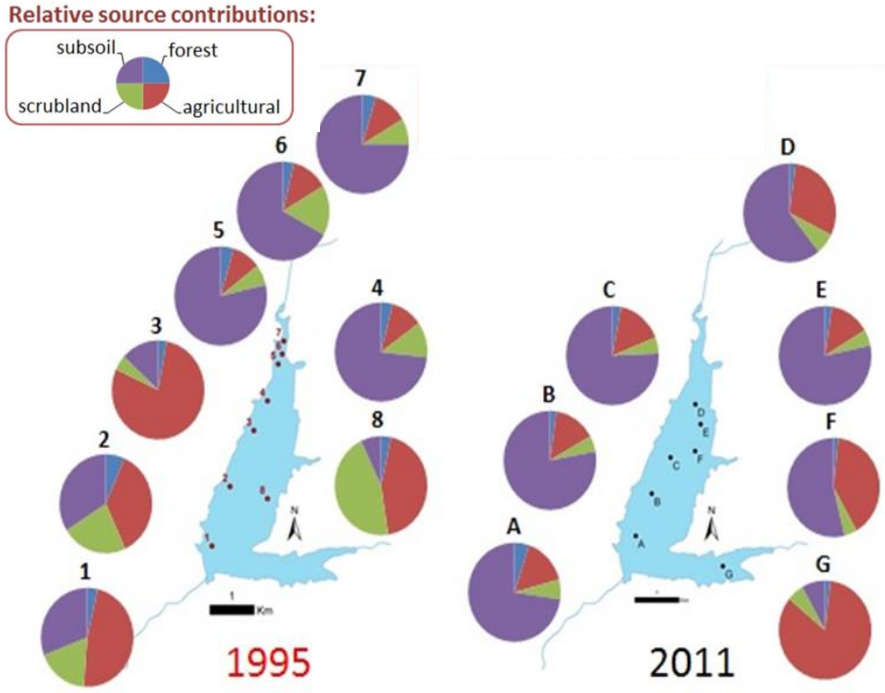
Reservoir siltation: Tracing recent changes of sediment supply in large catchments





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Climate smart agriculture, water cycle and emergency preparedness

Thanks you for your attention

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