

Sediment modeling in Los Laureles basin

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Sediment modeling in Los Laureles basin

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observation, measurement, and....

Where is sediment and runoff coming from?

What are the consequences of BMPs and land use change for:

- **Flooding**
- **Sediment load**

Key observation: Gullies

80% of roads unpaved
Gullies filled after each storm

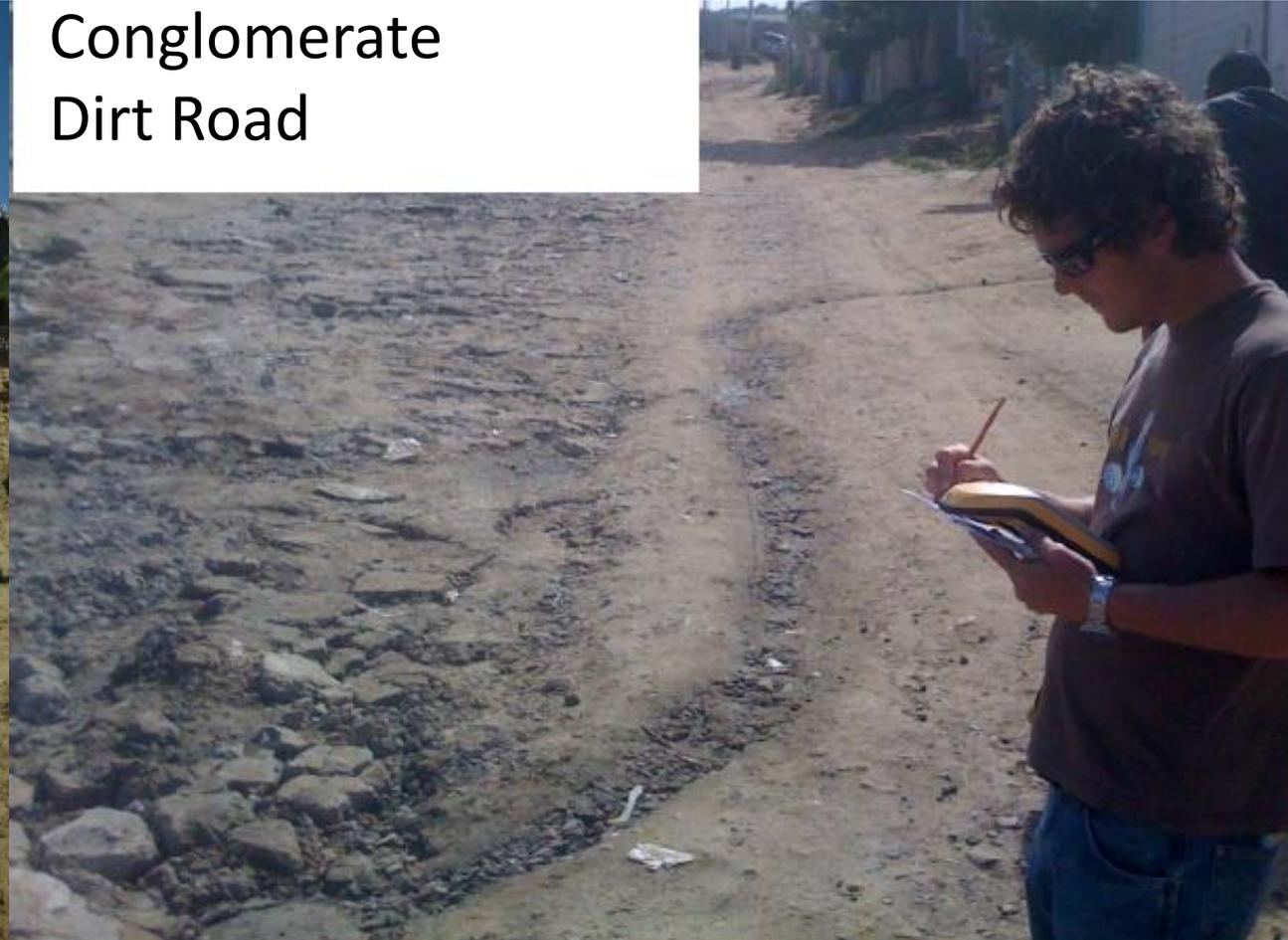


Key observation: Differences due to Geology

Sandstone
Dirt Road



Conglomerate
Dirt Road





Key
observation:
Channel Erosion

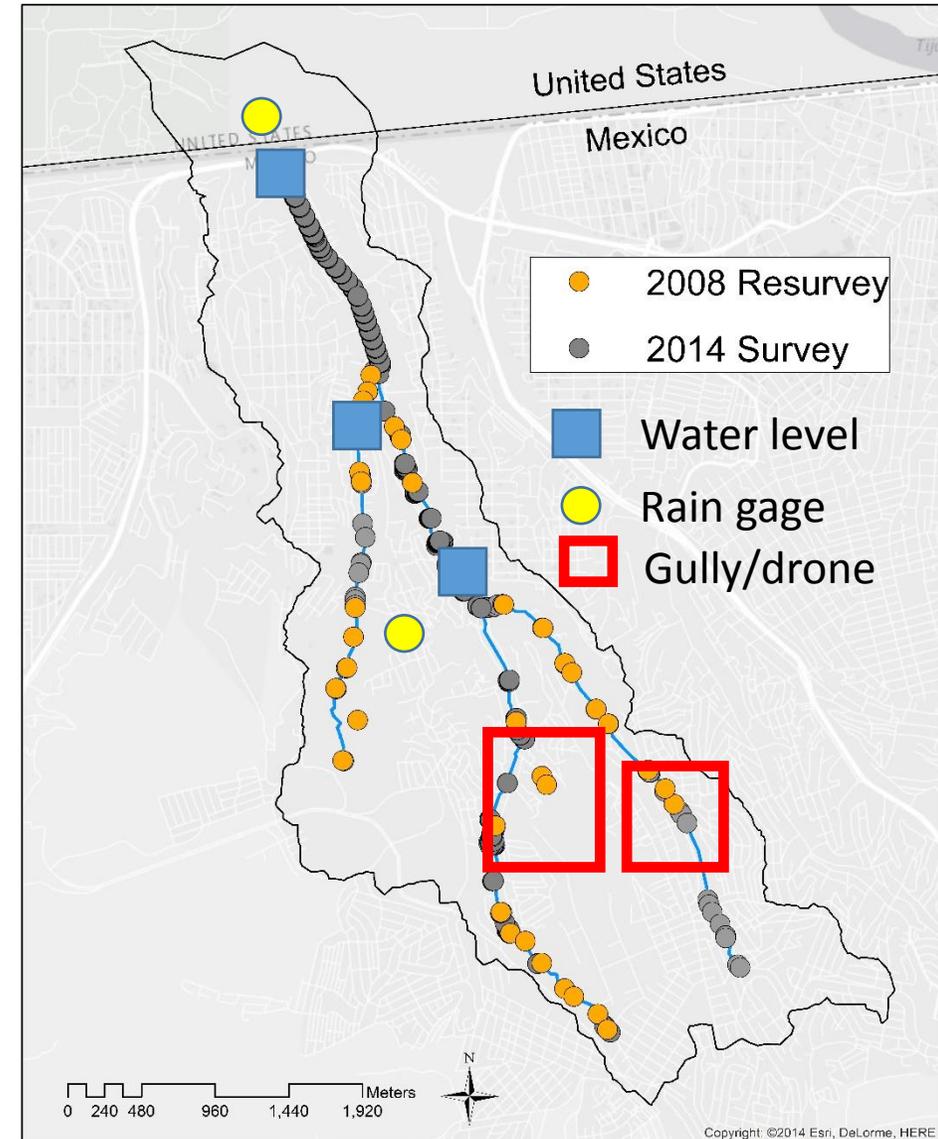
Key observation: Resident-reported flooding near the outlet



Research strategy: Coordinated field measurements and modeling

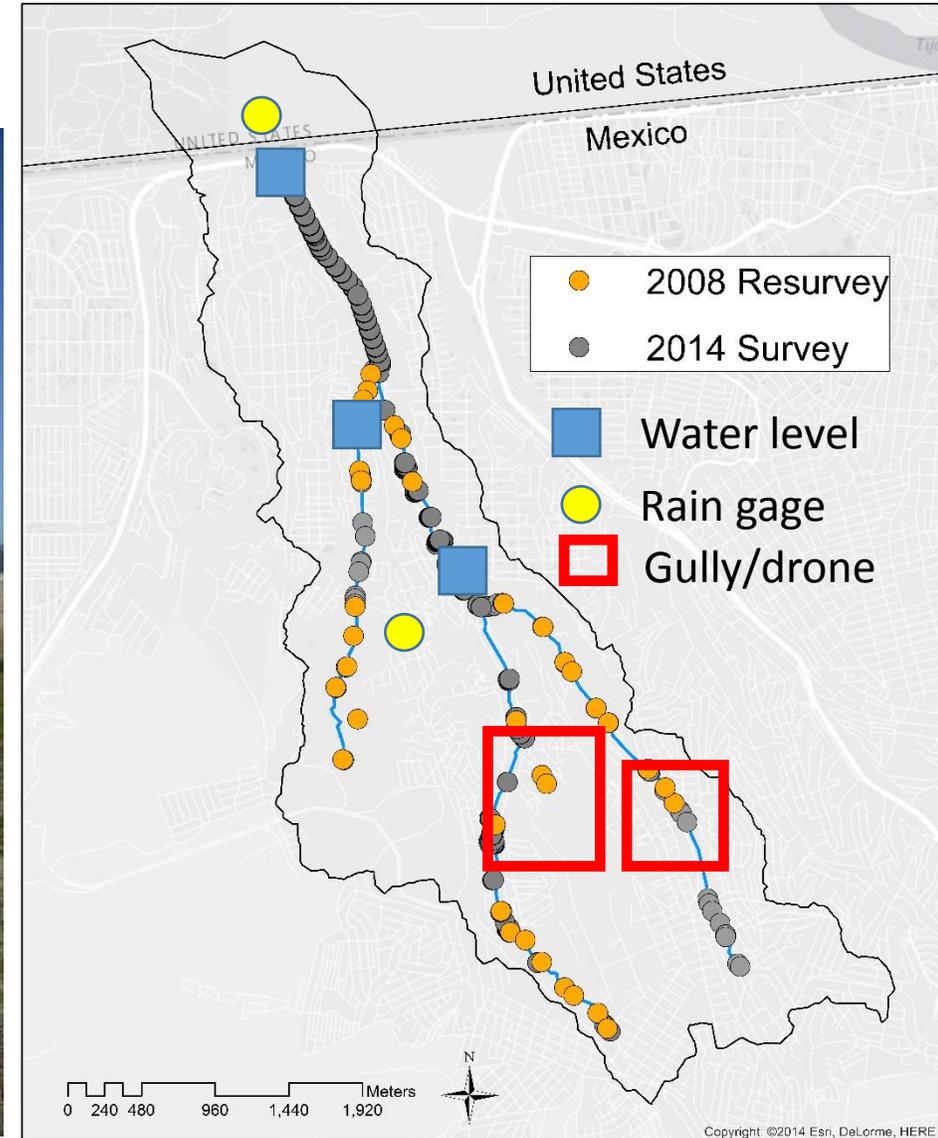
Measurements:

- Water level at the outlet, 2 other locations
- Water samples for sediment
- Rainfall (2)
- Gully surveys (ground and UAV)
- Soil/geology surveys
- Channel geometry (~138 locations)



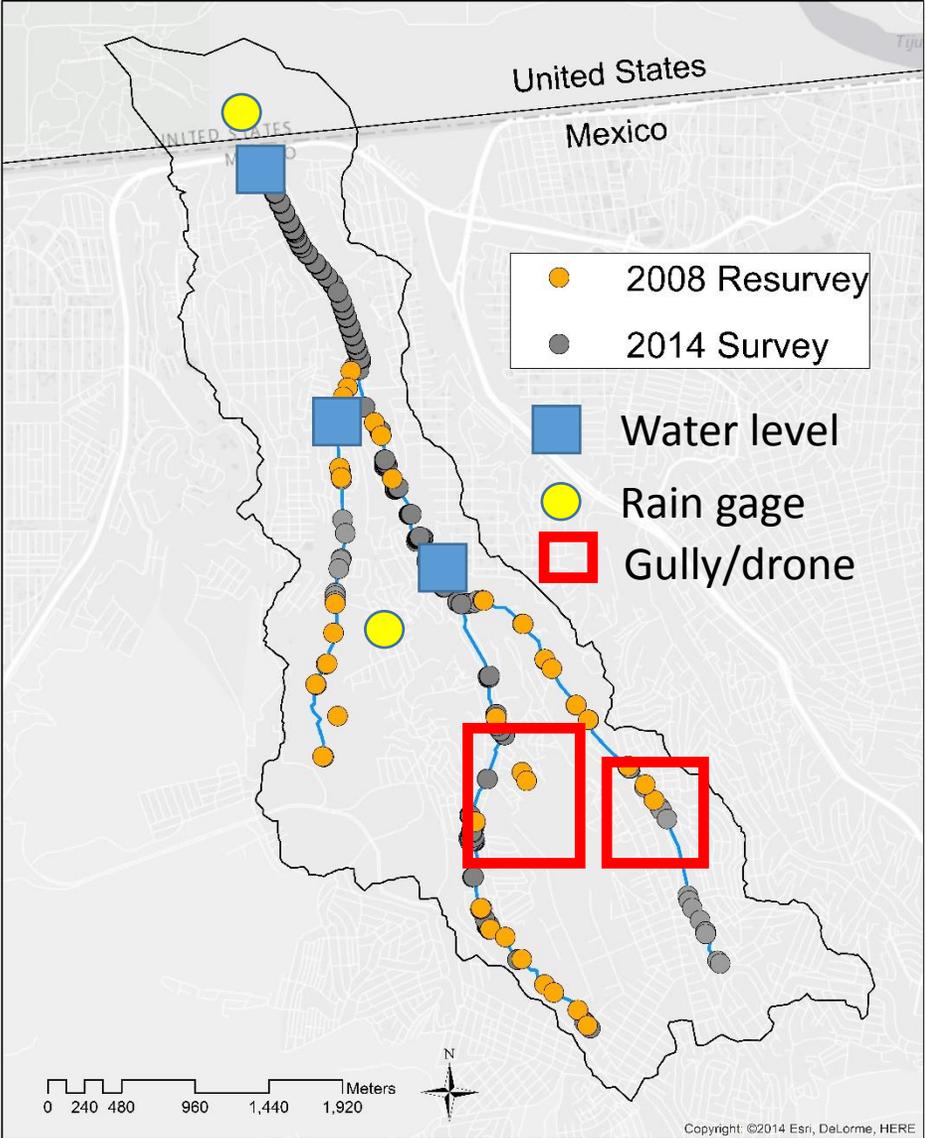
Research strategy: Coordinated field measurements and modeling

Measurement challenges:

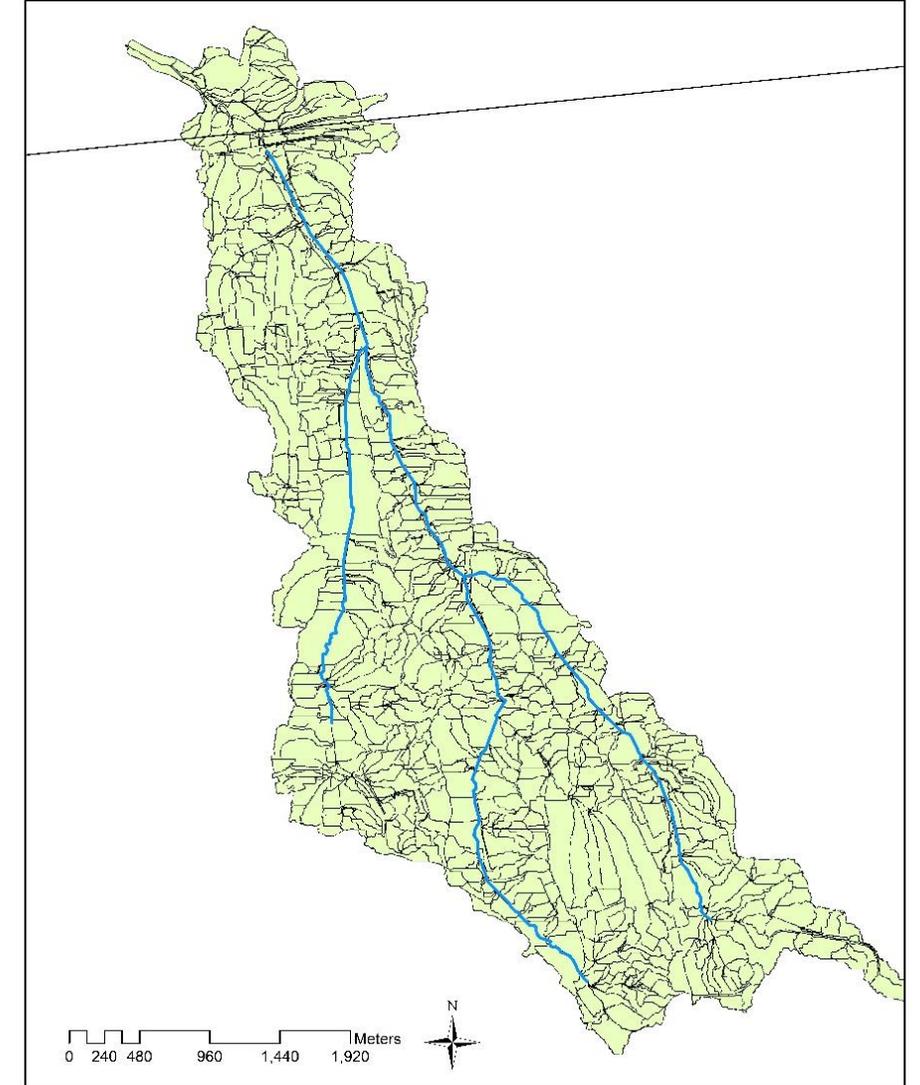
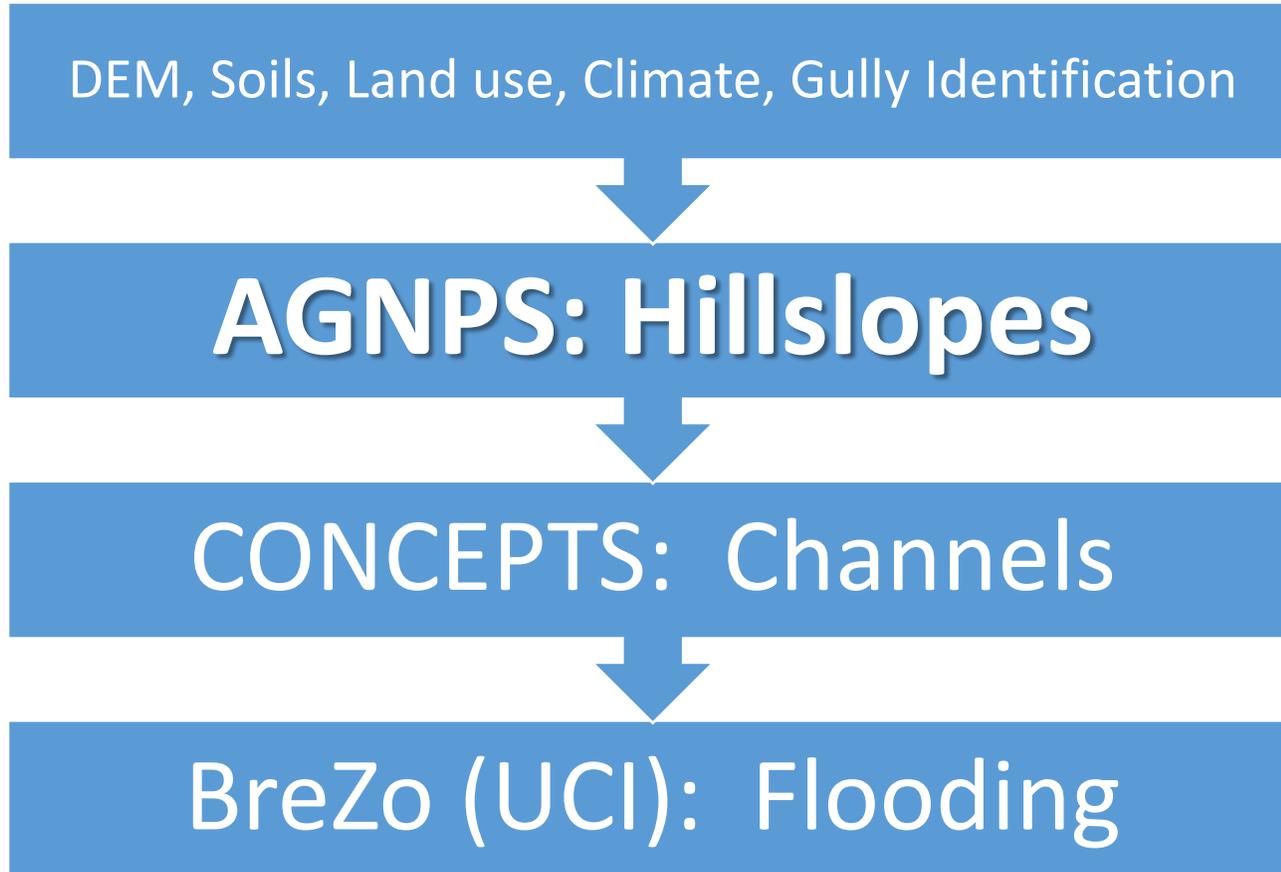


Research strategy: Coordinated field measurements and modeling

Measurement challenges:



Modeling strategy: 3 linked models



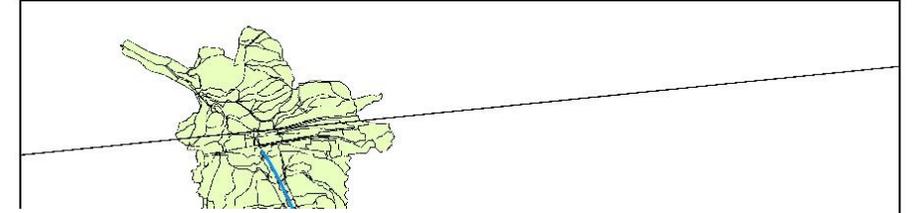
Modeling strategy: 3 linked models

DEM, Soils, Land use, Rainfall, Gully Identification

AGNPS: Hillslopes

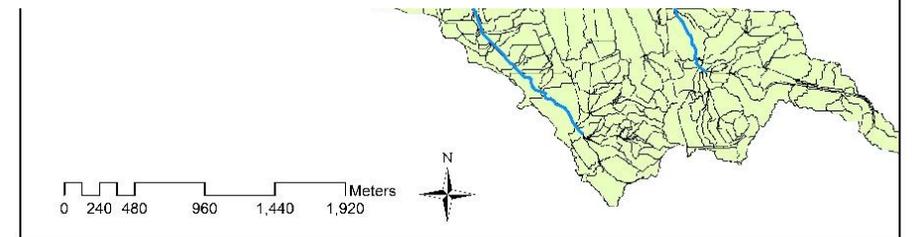
CONCEPTS: Channels

BreZo (UCI): Flooding

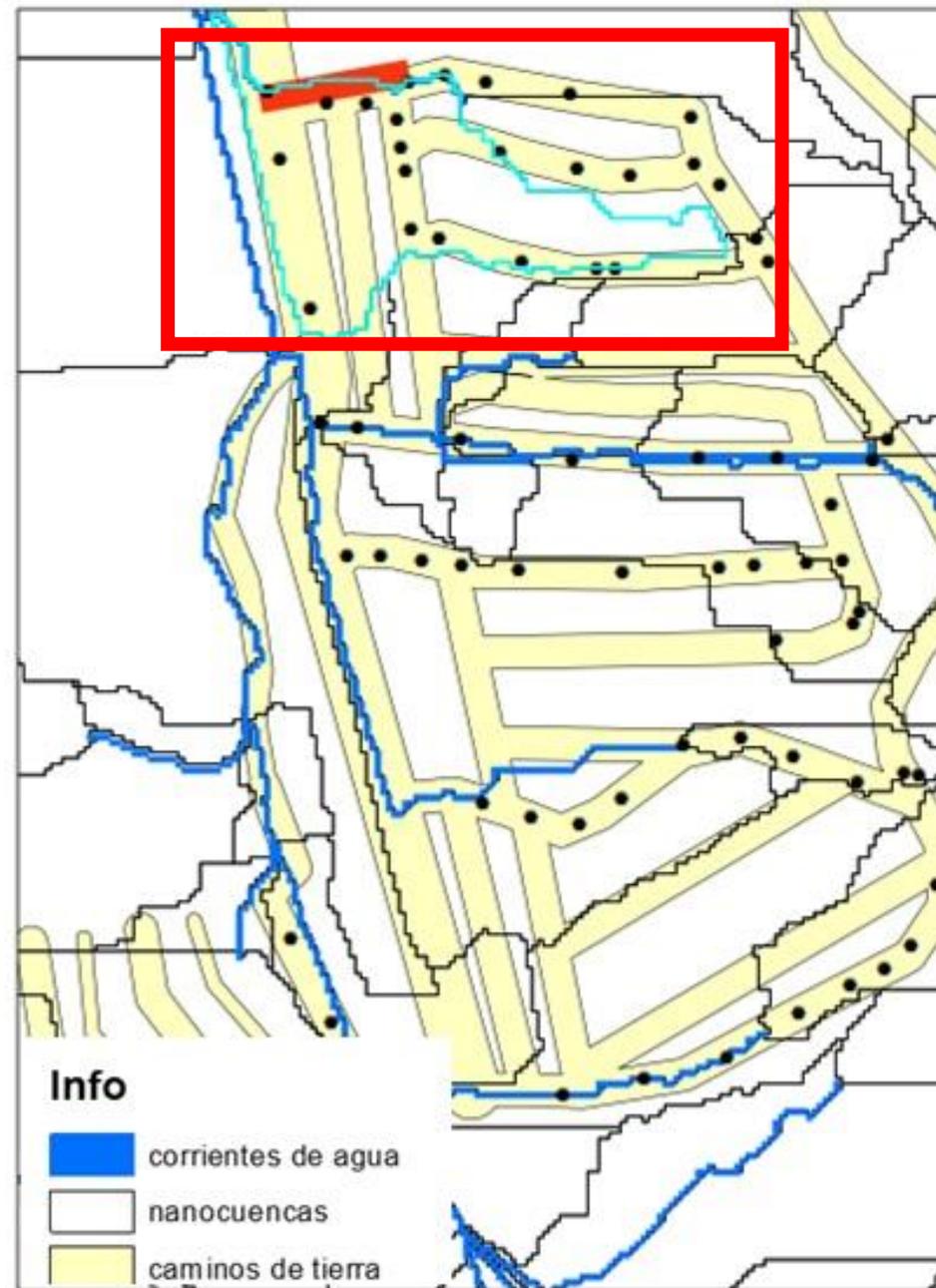


Key challenges:

- Calibration data
- Uncertainty in distributed parameters
- Numerical instabilities
- Representation of BMPs



1 AGNPS cell contains mixed land cover



What do we know?

Confident:

- Gullies are important on specific geologies
- Channel erosion occurs downstream of some hardpoints
- Sheet and rill erosion is also important
- Much of the channel is concrete—minimal erosion risk in main channel

Tentative:

- Road paving cuts down on sediment load
- Flooding is not dramatically affected by paving (??)