

# Small reservoirs in the West African savanna: Usage, monitoring and impact

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**[www.smallreservoirs.org](http://www.smallreservoirs.org)**

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# Small Reservoirs: Usage



Village level irrigation development

# Small Reservoirs: Usage



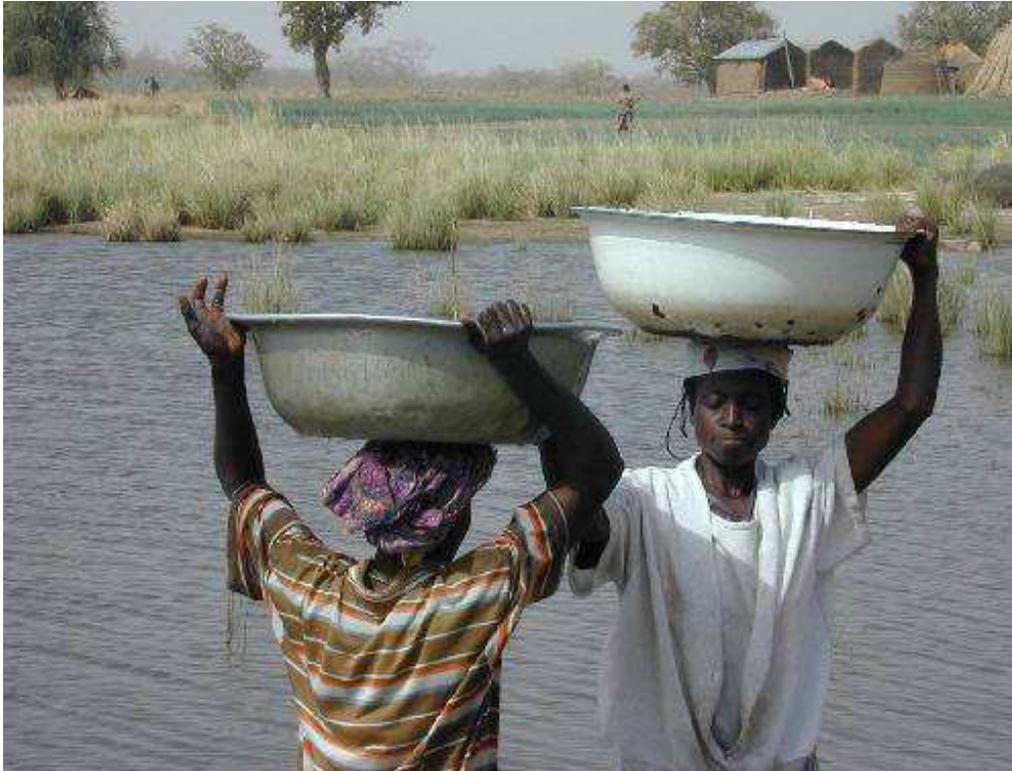
**Multiple use - Cattle**

# Small Reservoirs: Usage



**Multiple use - Recreation**

# Small Reservoirs: Usage



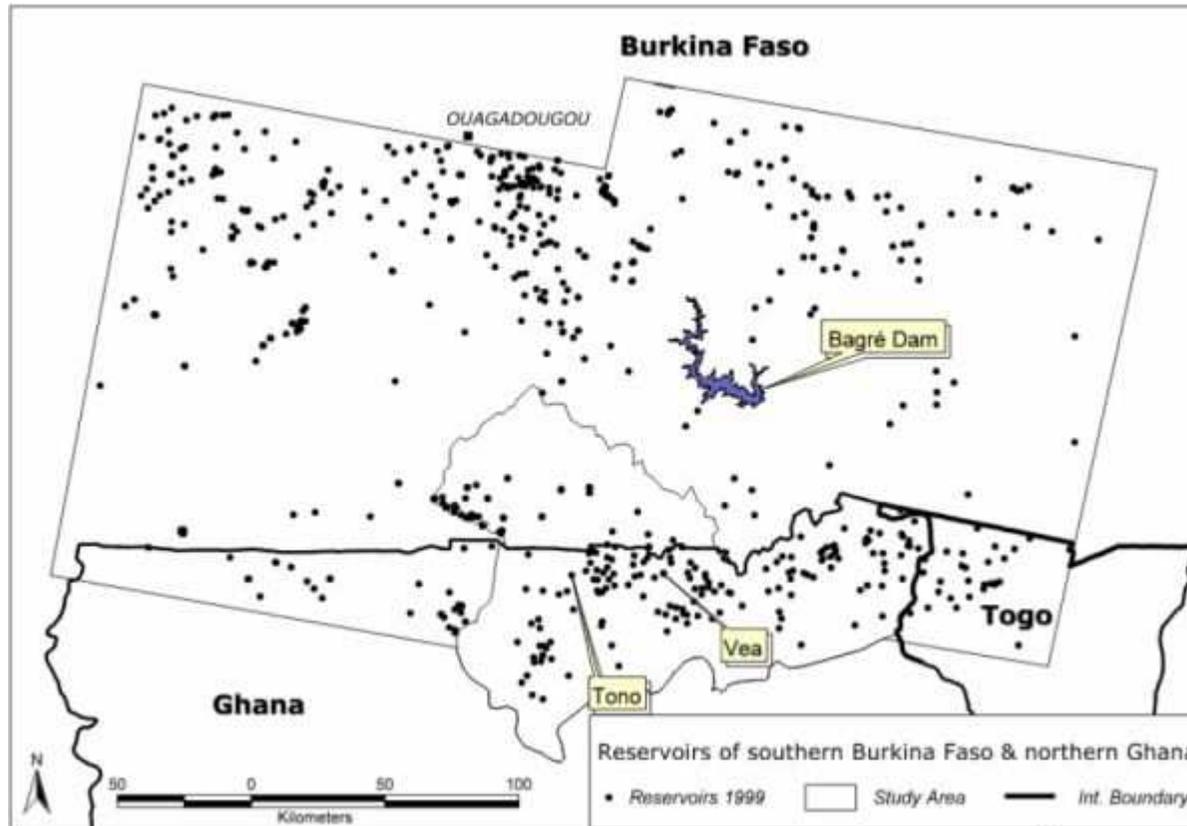
**Multiple use – Household water**

# Small Reservoirs: Usage



**Multiple use - Fishing**

# Small Reservoirs: Usage



	1984	1999
# Dams	302	710
ha Reservoirs	4134	31200

# Small Reservoirs: Monitoring

Map all reservoirs

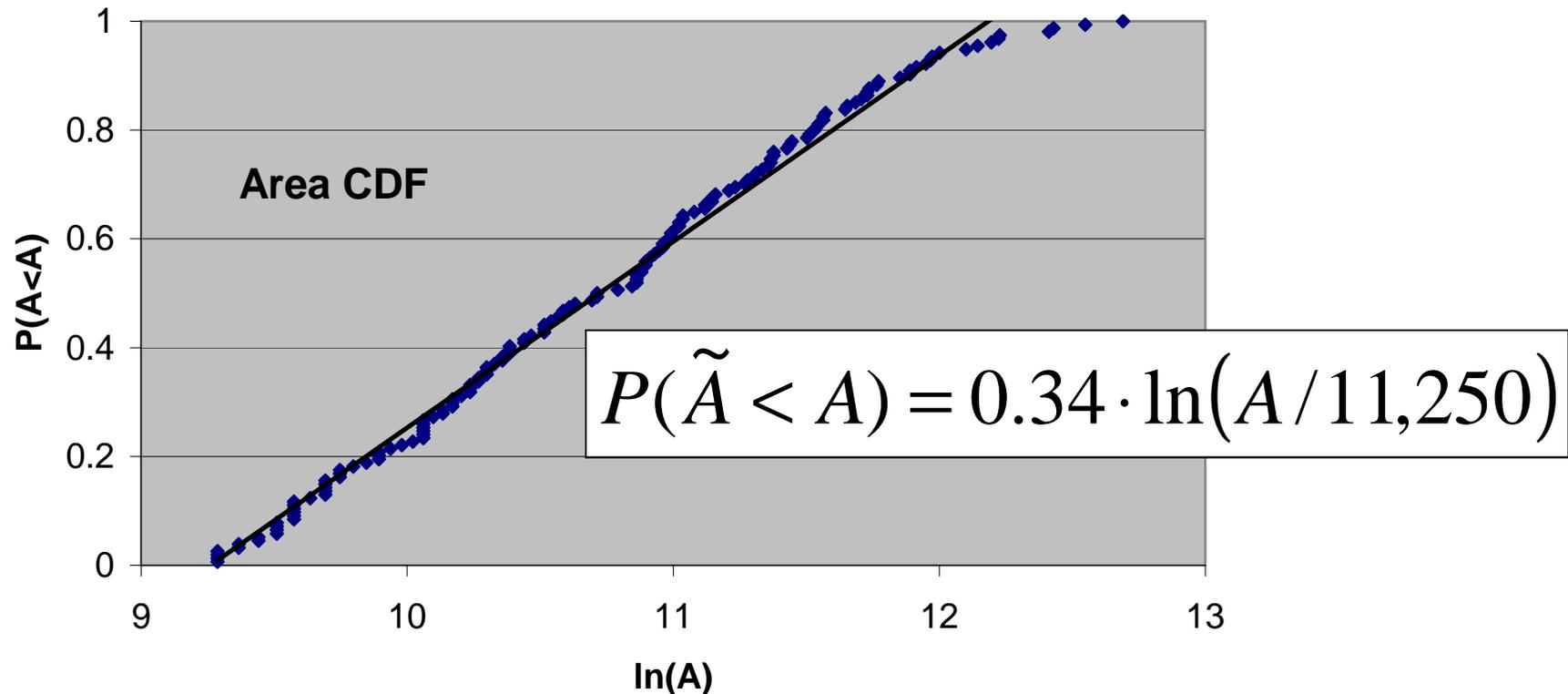
LANDSAT



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# Small Reservoirs: Monitoring

## Results, distribution

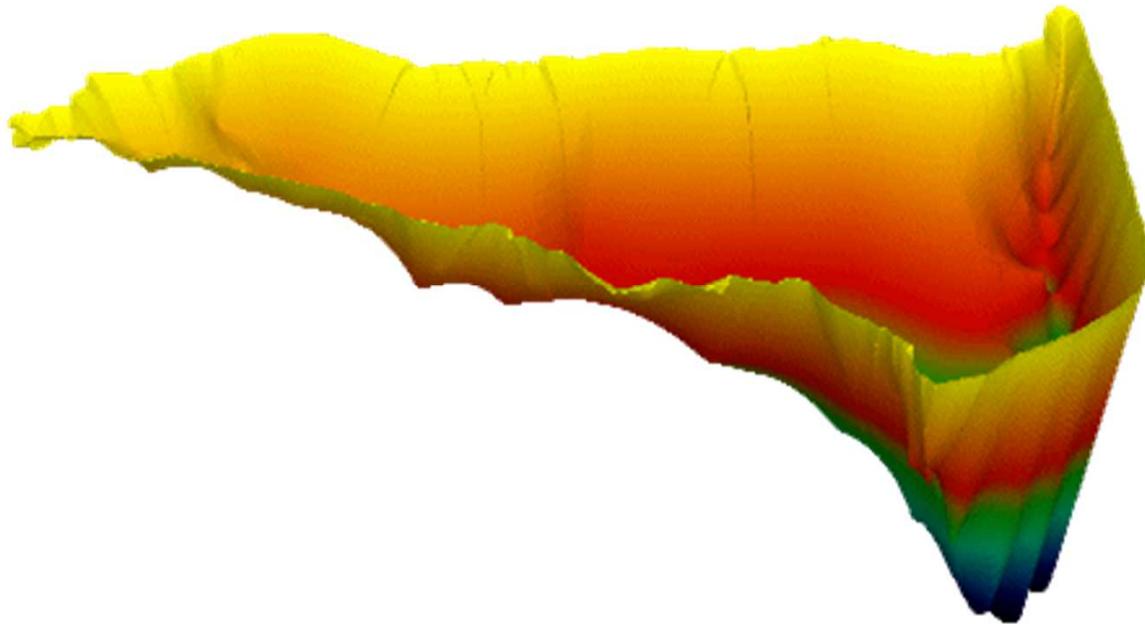


# Small Reservoirs: Monitoring Bathymetry



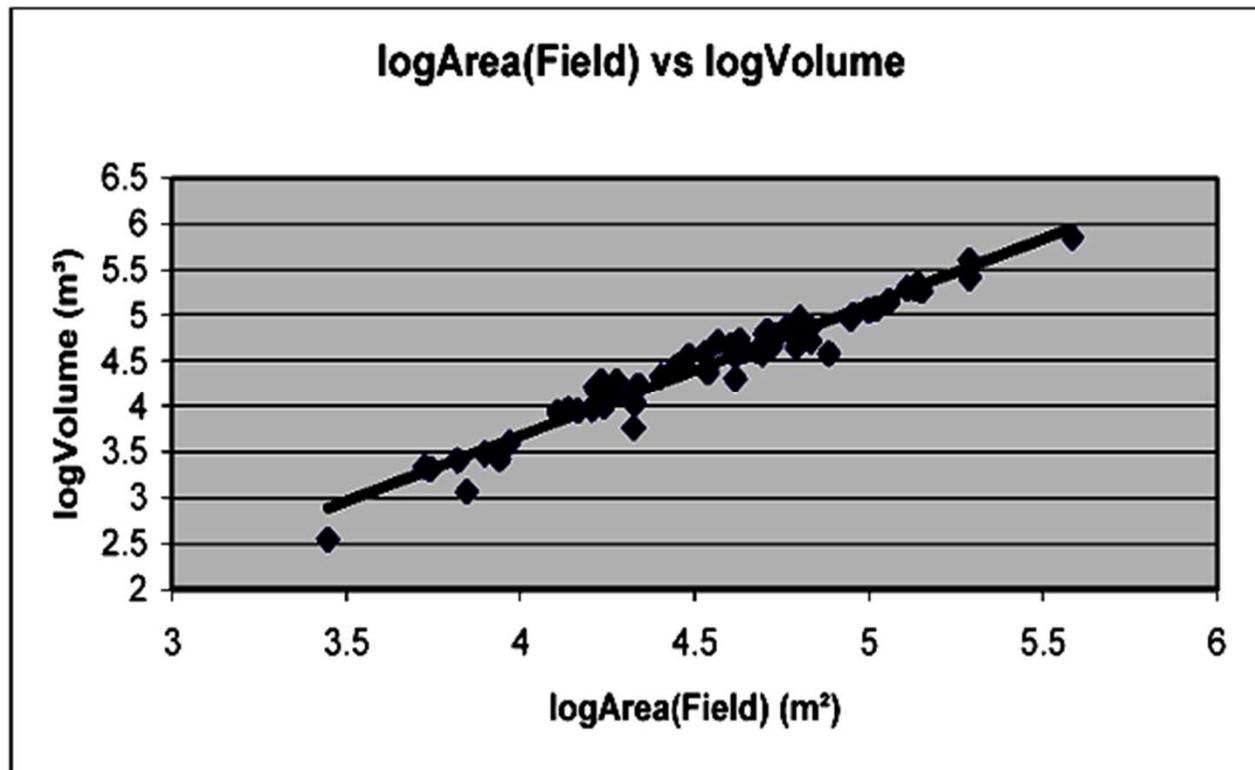
Bathymetric survey – Jens Liebe

# Small Reservoirs: Monitoring Bathymetry

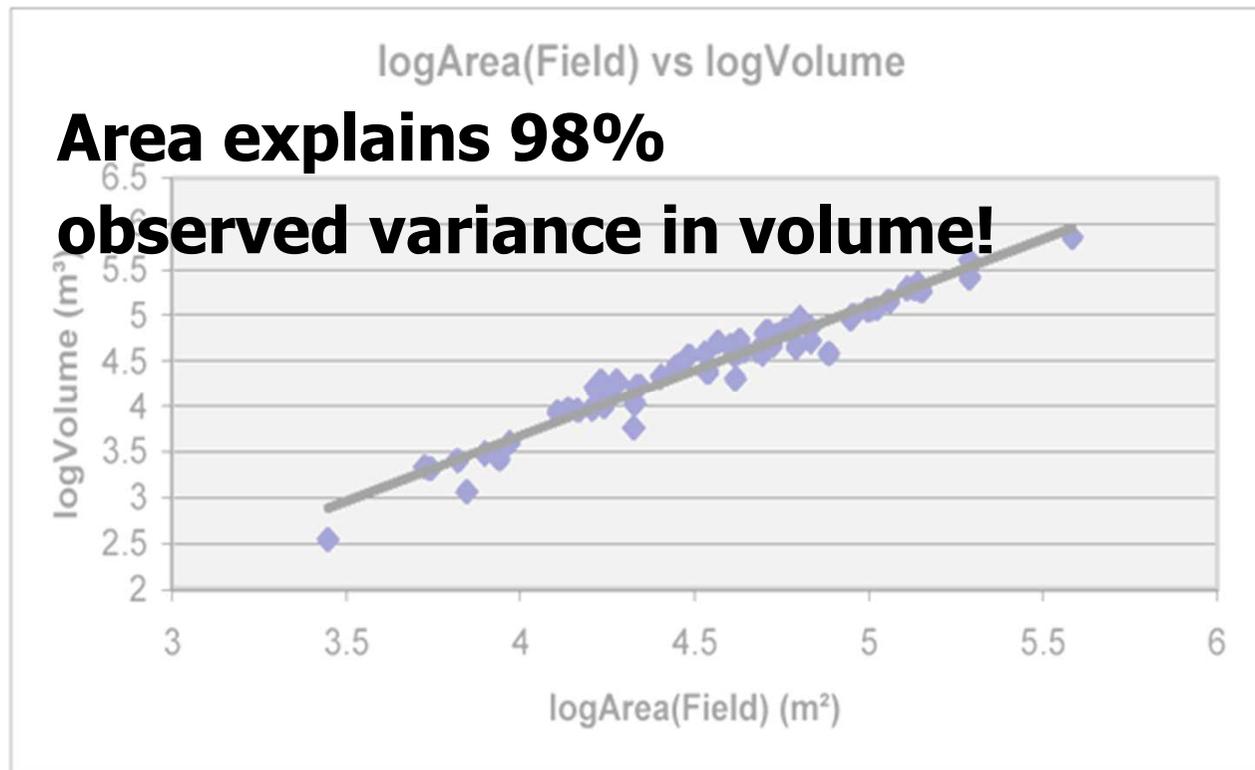


**Bathymetric survey**

# Small Reservoirs: Monitoring Bathymetry

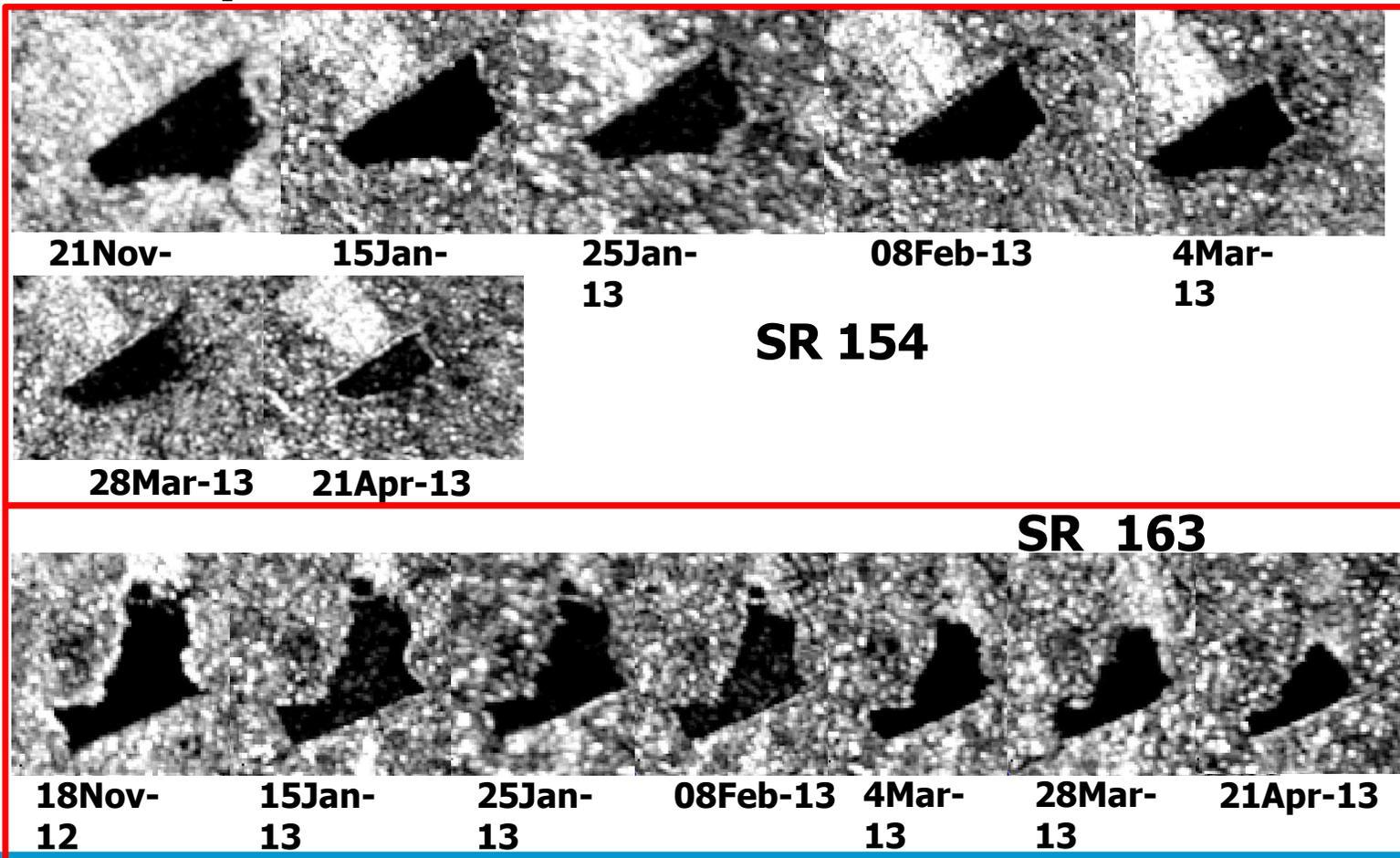


# Small Reservoirs: Monitoring Bathymetry



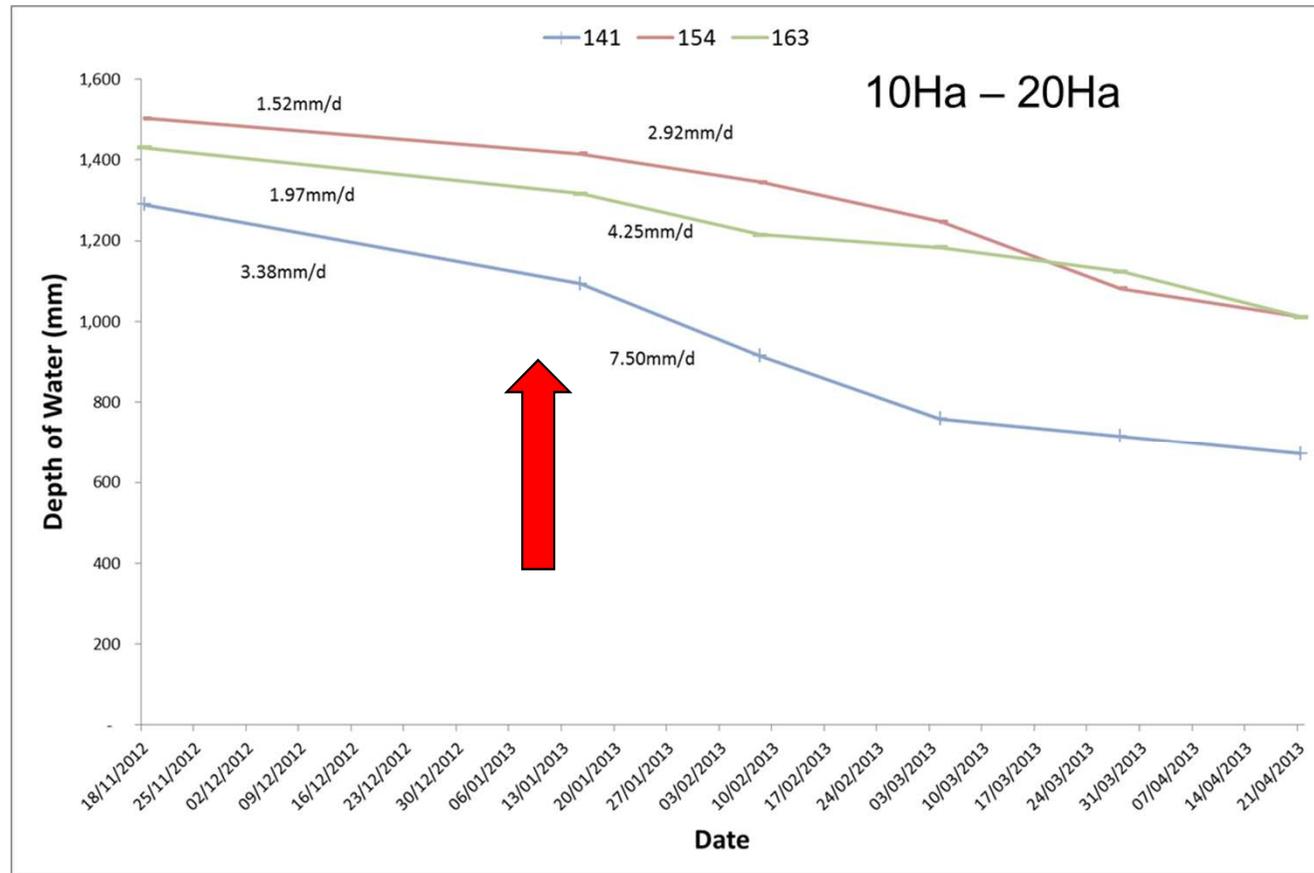
# Small Reservoirs: Monitoring

## Evaporation / net water use



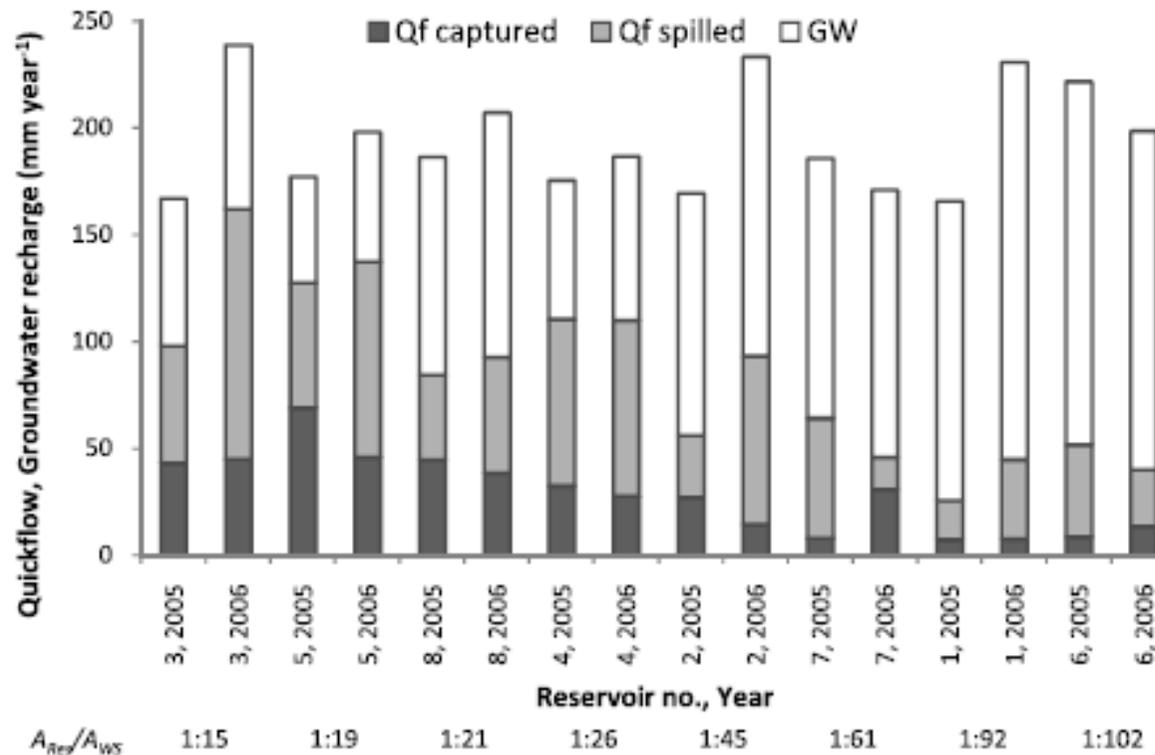
# Small Reservoirs: Monitoring

## Evaporation / net water use



# Small Reservoirs: Impact

Present impact small (<2%)



# Small Reservoirs: Impact

**One small reservoir is great,  
how about one thousand?**

**Small Reservoirs Project**  
**[www.smallreservoirs.org](http://www.smallreservoirs.org)**



**Challenge Program Water for Food**

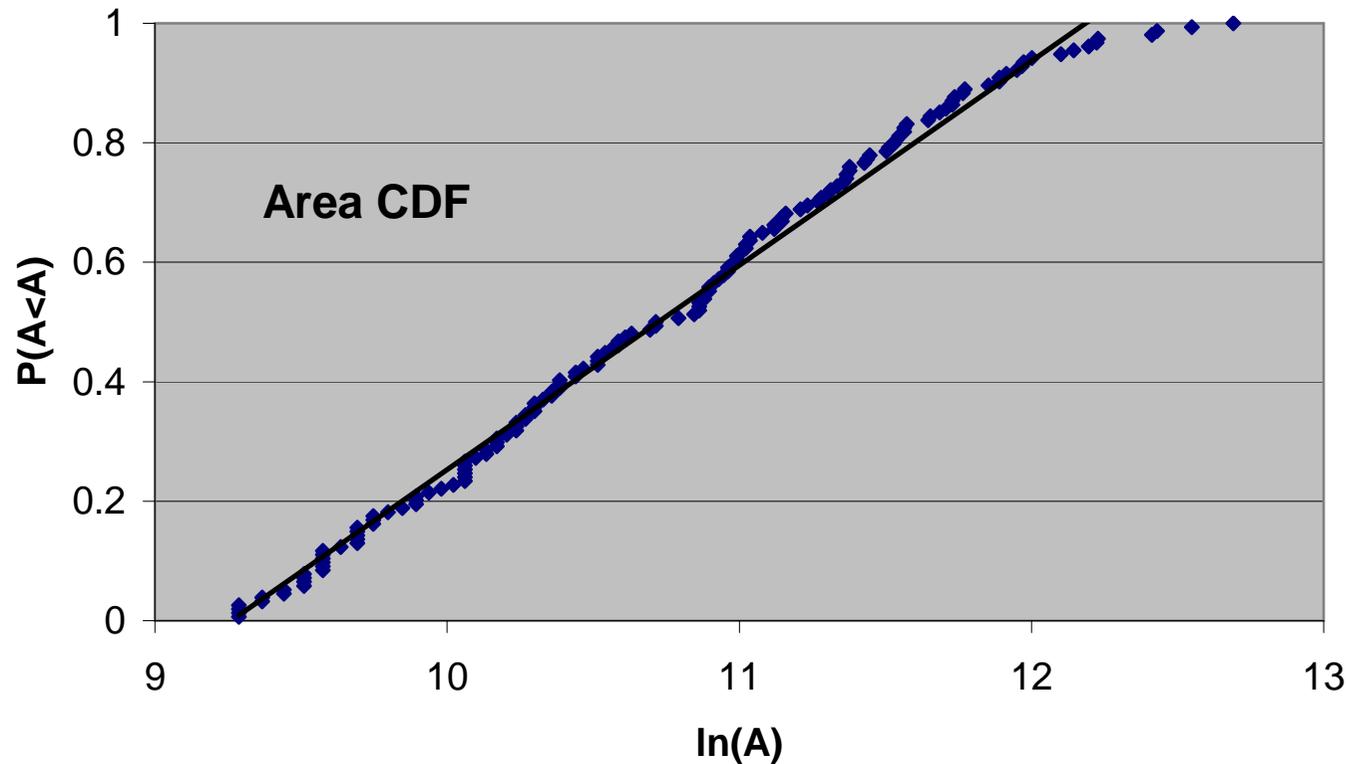
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# Small Reservoirs: Impact

## Statistical behavior of large number of small reservoirs

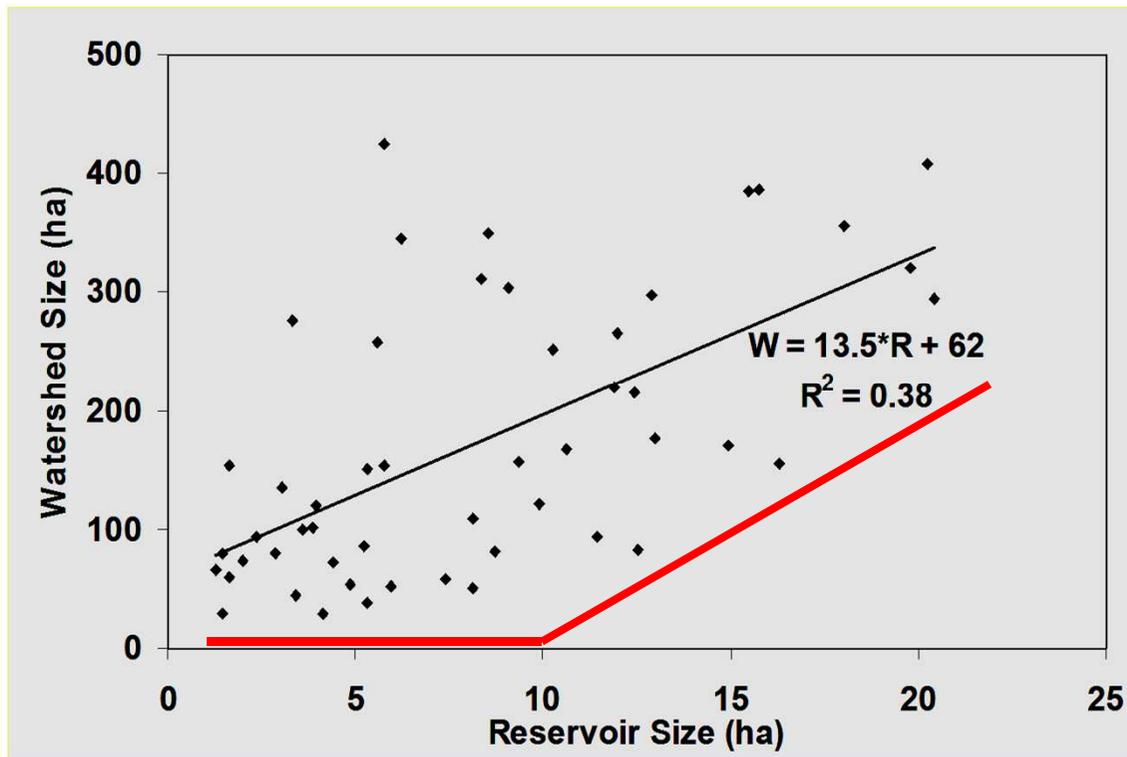
- **Impact assessment**
- **Planning**

# Small Reservoirs: Impact Distribution



# Small Reservoirs: Impact

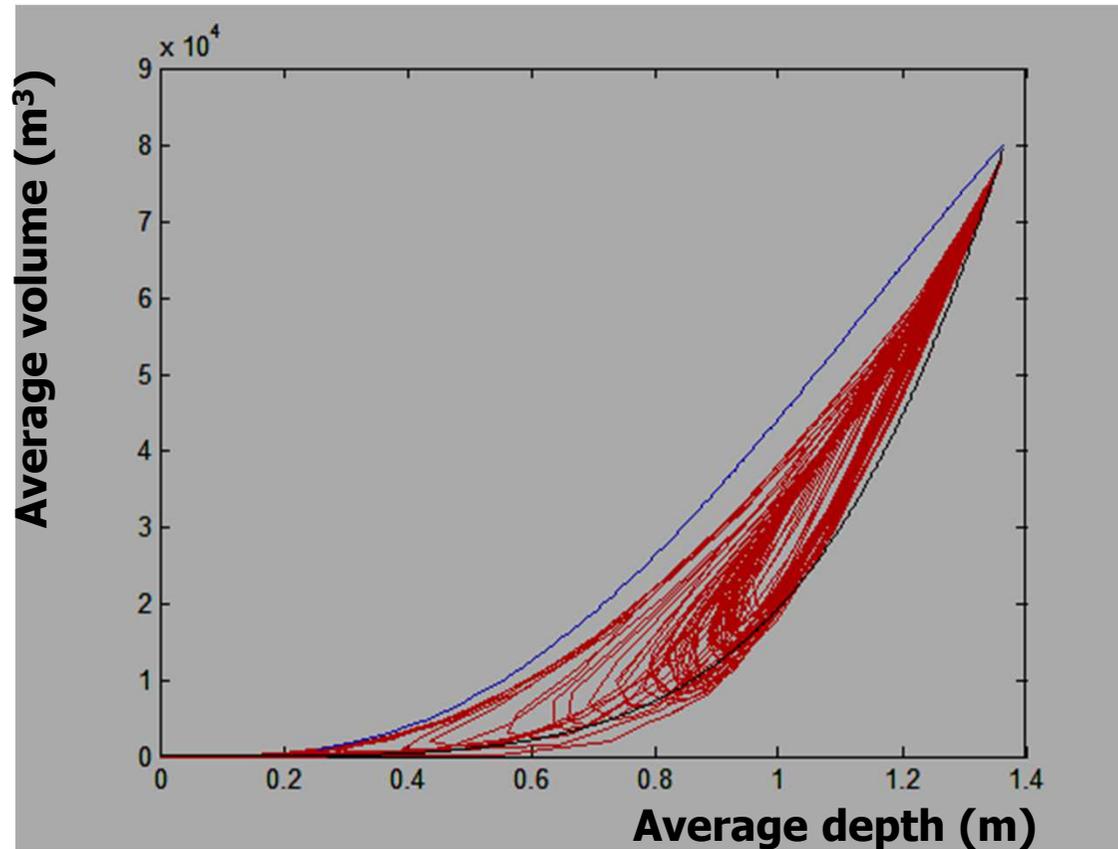
Size ↔ Watershed



Weak link watershed & reservoir sizes

# Small Reservoirs: Impact

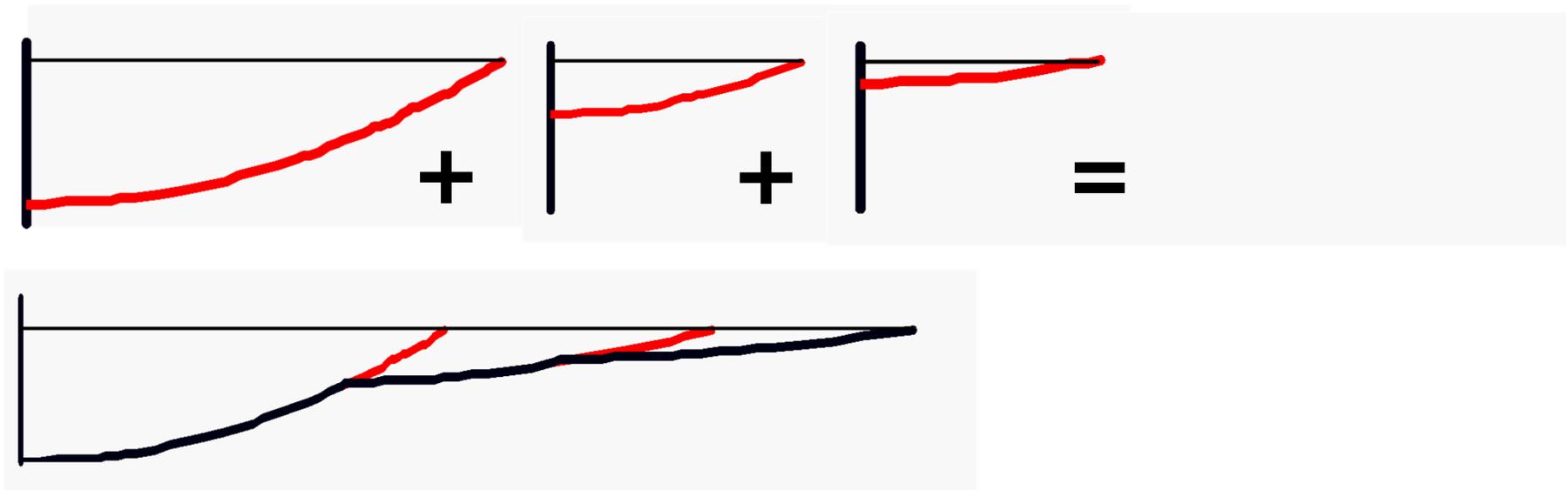
## MatLab Simulation



# Small Reservoirs: Impact

## MatLab Simulation

### Evaporation cycle



# Small Reservoirs: Impact

## MatLab Simulation

### Filling cycle

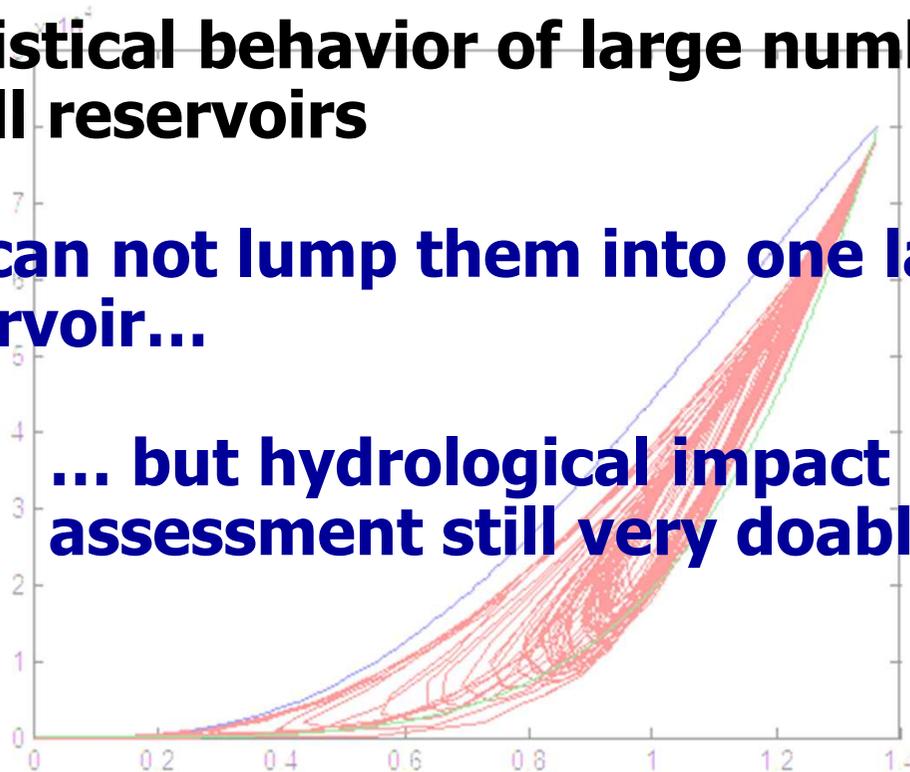


# Small Reservoirs: Impact

**Statistical behavior of large number of small reservoirs**

**We can not lump them into one large reservoir...**

**... but hydrological impact assessment still very doable.**



# Thank you for your attention!



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VOLTA • LIMPOPO • SAO FRANCISCO

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