A NEW CYCLE OF GLOFs in Colonia River

AIM: to investigate changes of floodplain morphology due to extreme floods, using Colonia GLOFs as convenient case study ("field lab") monitored by ground & remote methods, and estimate (max) sediment flux via erosion/deposition data.

STUDY SITE

- US$7 billion mega dam project [2,3]: reservoir silting!
- GLOF frequency: opp. to study effects of extreme flows in Colonia River several times a year, which otherwise usually occur every hundreds of years in most rivers

RESULTS: morphology changes using DEMs of Difference & GCD [4]

RESULTS: Erosion/deposition (GCD)

CONCLUSIONS
- After 40 years without GLOFs, confluence-stored sediment was eroded by initial GLOFs; subsequent events deposited sediment.
- This sequence of GLOFs is an ideal case to study the effect of different (and extreme) discharges on braiding [5], flood risk [1] and sediment flux.

ONGOING WORK
- River surveys, "frozen" palaeo-bars
- Suspended sediment monitoring, bedload
- Flood hazard analysis, palaeohydrology
- Floodplain vegetation studies [5]