## Flooding dynamics of the Volga-Akhtuba floodplain



L.V. van den Bosch<sup>1</sup>, M.A. Crone, D. Zolotaryev<sup>2</sup>, L.M. de Bruijn<sup>1</sup>, O.V. Filippov<sup>2</sup>, A.V. Plyakin<sup>2</sup>, H. Middelkoop<sup>1</sup>

<sup>1</sup>Utrecht University, <sup>2</sup>Volzhsky Institute of Humanities In cooperation with: Wageningen University, IMARES, Institute for Inland Water Management and Waste Water Treatment (RIZA), Volgograd State Fisheries Institute, WL | Delft Hydraulics, Moscow State University



## Floods & fish habitat

Volga-Akhtuba floodplain is annually flooded in spring due to the release of snowmelt water from the Volgograd hydropower dam. Then, a complex system of channels and lakes in the



In accordance with the *Flood Pulse*-Concept (Junk, 1989), the presence of the annual flood is expected to be a dominant factor in the reproduction success of many floodplain fish species. In the future the size and timing of floods however may change due to changes in climate, land use and reservoir management.

floodplain becomes connected, and large areas of land are flooded for several weeks. During this period, many fish species find habitats to spawn within the inundated floodplain.

flooded grassland habitat

fry (larvae) of bleak, rudd and goldfish







Measuring water levels along the transect Leninsk - Bulgakov (2007)

Digital land cover map from satellite data: roughness

## Habitat prediction

Analysis of fish habitats in **ArcGIS** using model output (inception, duration, connectivity, flow velocity, water depth), and other ecological parameters (vegetation, shore length, temperature)





Model output: 2D time series

- Water levels
- Flow velocities
- Inundation duration





