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Towards the ICCE–IAHS Scientific Decade 2013-2022

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Outlines

- Main research issues
- Science Plan
- Key Science questions.
- Suggestions

Main research issues

- Fluvial sediment is not only an important scientific issue by itself, but also one of the crucial controls for the water quality problem
- Current changes of sediment loads of the rivers in the world and driving forces
- Changes of sediment loads of the rivers in the past
- Changes of sediment loads of the rivers in the future
- Modeling of soil losses and sediment loads
- Application of tracing techniques in erosion and sedimentation studies
- Response of fluvial systems to environmental changes (natural and human-induced) in various temporal and spatial scales

Scientific plan

- ICCE supports initiative of IAHS President Gordon Young Deltas-2013 Year. ICCE will actively participate in Deltas-2013 Year.
- ICCE thinks that it is necessary to systemize available information about hydrological observations for the largest world river basins in one data bank. The given data bank should include each large river basin results of monitoring water, nutrient and sediment fluxes on slopes, slope catchments, small river basins, medium river basins.
- ICCE plans to concentrate more effort on predicting the fluvial system behavior and, particularly, sediment yield variability caused by natural and man-made environmental changes at different spatial and temporal scales.

Key Science questions

- Impacts of climate changes on rivers' sediment loads in different regions of the world (eg. wetting and drying regions).
- Mechanisms of reducing sediment loads in large rivers by large reservoirs (trapping sediments, reducing transportation capacities, *et al*)
- Relative contributions of different driving forces to reduction of sediment loads in large rivers (climate changes, land use changes, infrastructure, reservoirs, soil conservation, *et al*)
- Reconstruction of paleo-hydrology by investigation of sedimentation rates in natural reservoirs as well as on river floodplains and associated environmental conditions using different chronological methods
- Reliability of the predicted results derived from the modelling of soil losses and sediment loads
- Future changes of sediment loads in different regions of the world (developed, developing countries; wetting and drying areas)
- Differences between rural and urbanized fluvial systems

Suggestions

- IAHS should stimulate more joint scientific programs related to climate fluctuations and climate changes in different regions of the world, particularly to the regions with obvious trend to increasing or decreasing precipitation. It considerably changes hydrological cycles and sediment redistribution rates.
- Interactions between the IAHS commission and working groups should increase considerably. For example, more attention should be given to study interaction between chemical, biological and sediment loads. It is very important for water quality issues.
- Until present water discharge and sediment yield monitoring in rivers across the world is very irregular. Numerous regions with very limited data still exist throughout the world. It seems that the IAHS should stimulate the organization of such monitoring system for different world regions in cooperation with other international organizations with help of the World Bank and the other international Funds. It seems that the modern techniques and equipment will allow to receive unique data which are required for the correct evaluation of influence of climate changes on hydrological parameters in different landscape zones.

Thank you for your Attention