

Hydrographic survey of the river Drava branches in the process of revitalization, flood control and morphological monitoring

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TS06J - Hydrography in Action 1
Commission: 4

Terms of Reference

This hydrographic survey is a contribution to the draft guide for the following:

- flood forecasting
- upgrading of the morphological monitoring system
- River Drava branches revitalization

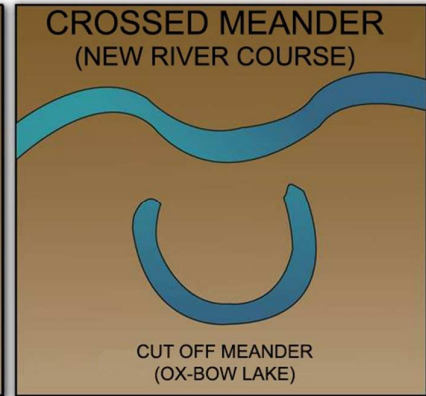
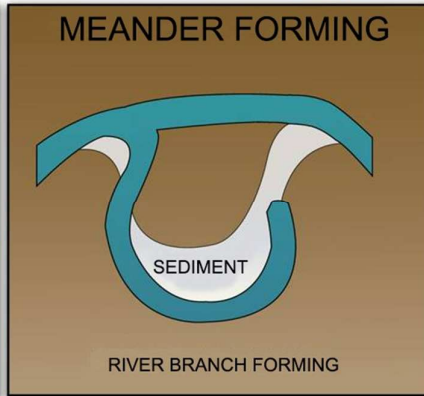
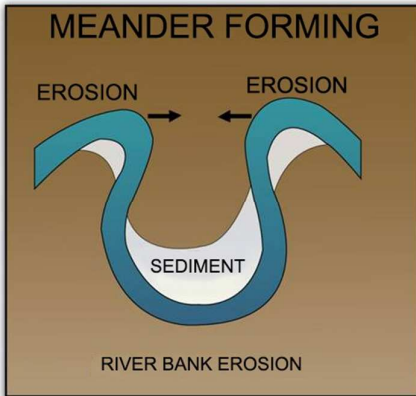
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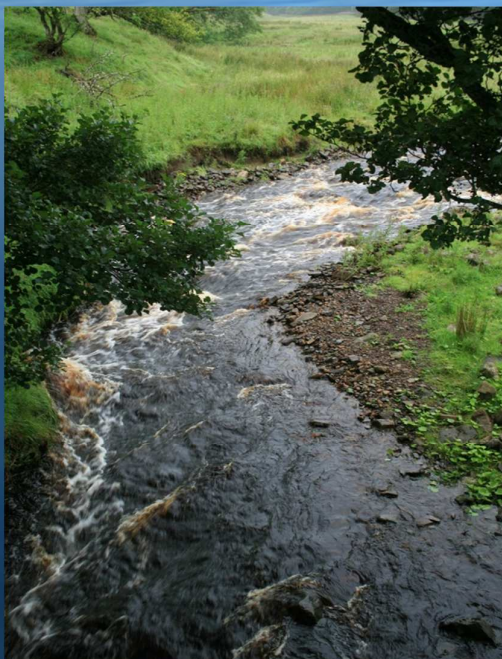
Dynamic process of the river channel



end



Stream and river channel meander

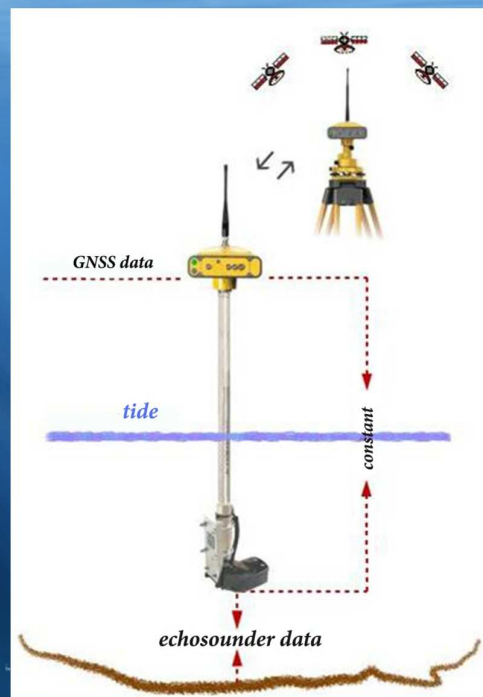


Preparatory works



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Hydrographic survey



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Hydrographic survey



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Accuracy assessment of hydrographic measurements

$$\sigma^2 = \lim_{n \rightarrow \infty} \frac{1}{n} \sum_{i=1}^n \varepsilon_i^2$$

The theoretical variance

Shor = ±2.3cm


$$s^2 = \frac{1}{n} \sum_{i=1}^n \varepsilon_i^2$$



The empirical variance

Sver (233KHz) = ±2.8cm


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Right bank branch near Legrad



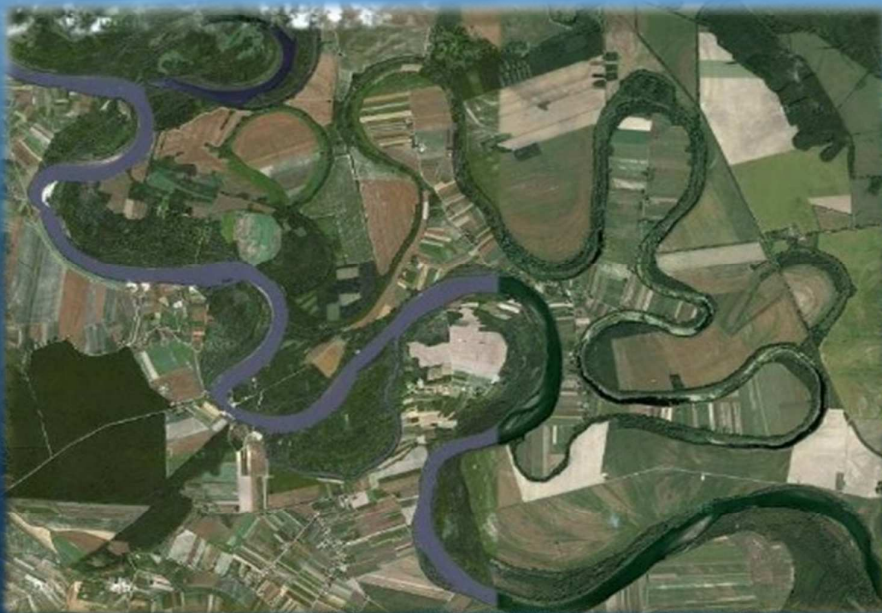
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Right bank branch near Komatnica



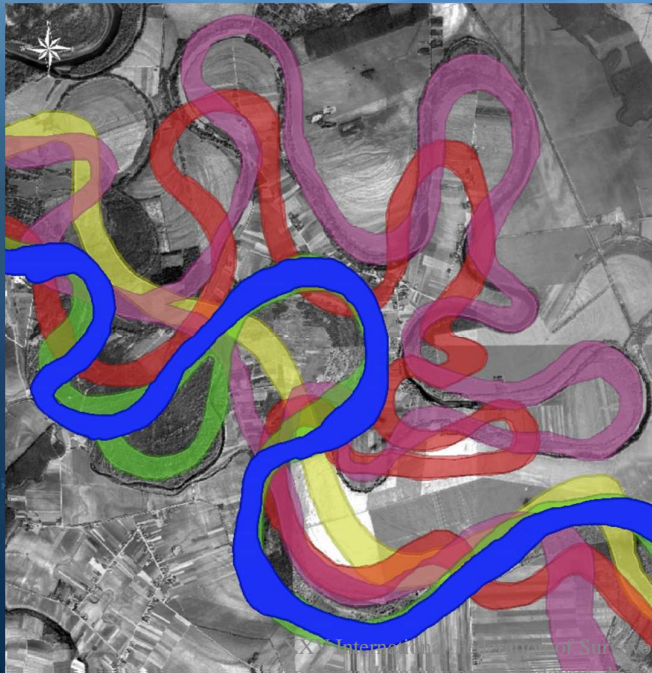
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Left bank Branch near Križnica



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River Drava channel position changes in last 230 years (Križnica)



Yellow	1784
Red	1842
Magenta	1886
Green	1966
Blue	2003

Right bank branch near Čađavica



Right bank branch near Višnjevac



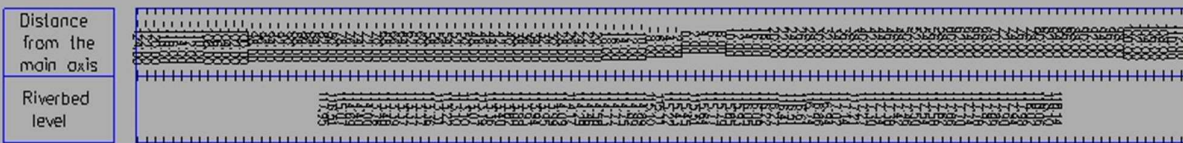
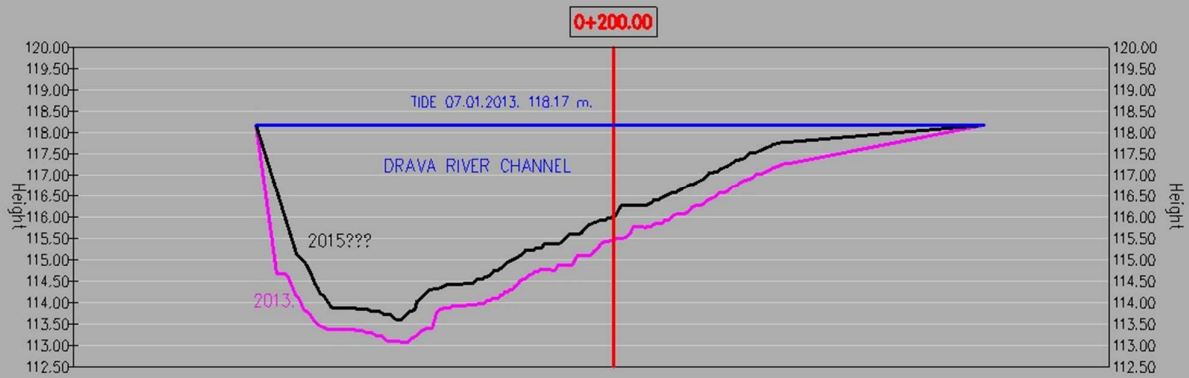
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River branches revitalization



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Morphological monitoring



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Flood forecasting system upgrading

Retention basins for the Croatian inland waters:



Lonjsko polje

(able to accept ~ 800 x 10⁶ m³
 of the Croatian inland waters)

Kopački rit

(able to accept ~ 500 x 10⁶ m³
 of the Croatian inland waters)

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Flood forecasting system upgrading



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Flood forecasting system upgrading

Volume of the river channel and branches and its tributaries

Volume of water discharged by the hydroelectric plants

Morphological monitoring data obtained by hydrographic survey



Geoinformatic, hydrographic and hydraulic model of the Drava River

Volume of expected rainfall

Volume of melting snow in the Alps



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Conclusion

- Hydrographic and hydrologic surveys

- Flood forecasting system upgrading

- Revitalization of the river Drava areas

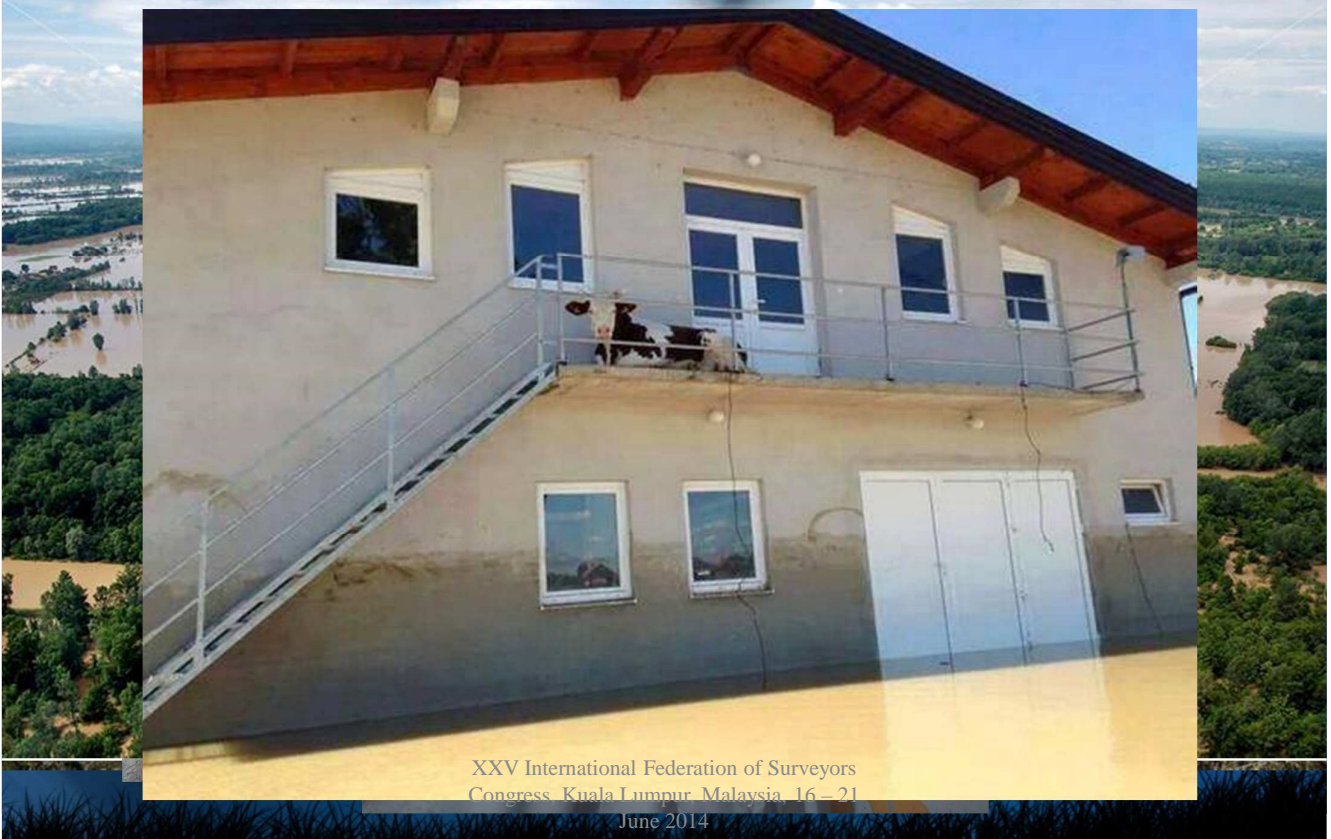
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Balkan floods, May 2014



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