



Solutions for Reliable Navigation in Low Water Conditions on Hungary's Danube Section

Presenter: **Ágnes Takácsné Tóth**

Date: 4 March 2026

Joint Workshop on Waterway Management of EUSDR/PA1a and the Danube Commission

Institutional & Operational Challenges

Key Aspects for Implementation of a Deep Channel Designation System in Hungary



Legal & Regulatory Aspects

- Update Notices to Skippers to reflect changes
- Amend national regulations



Technical Aspects

- Maintaining up-to-date Inland ECDIS charts
- Increase frequency of bathymetric surveys



Economic & Resource Aspects

- Survey & chart update costs
- Resource requirements



Hydromorphological Aspects

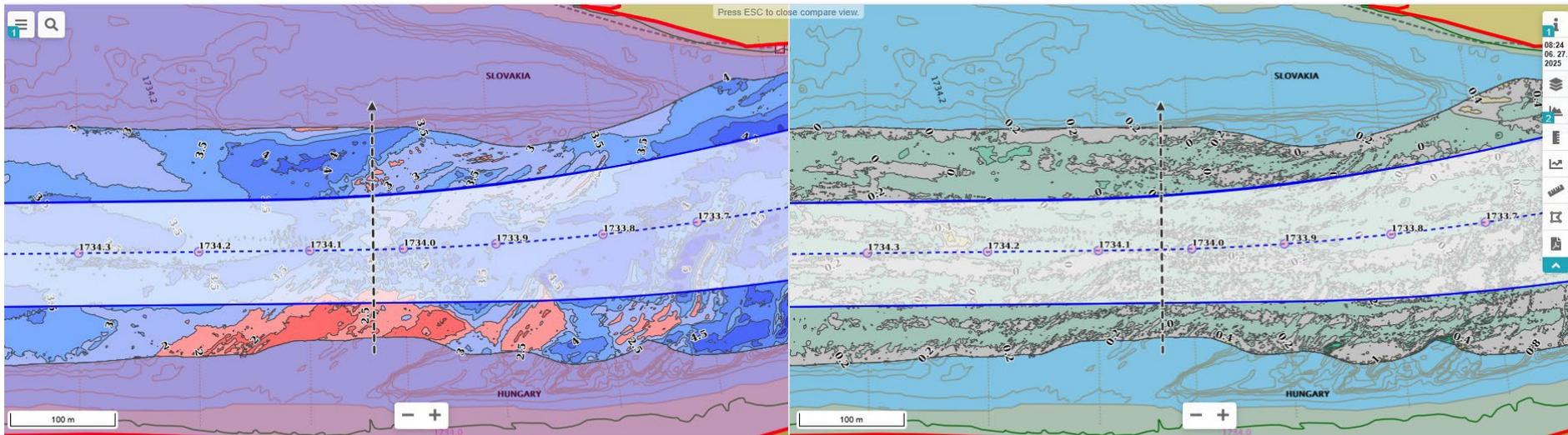
- Survey frequency linked to riverbed dynamics
- Specific bed material in each section



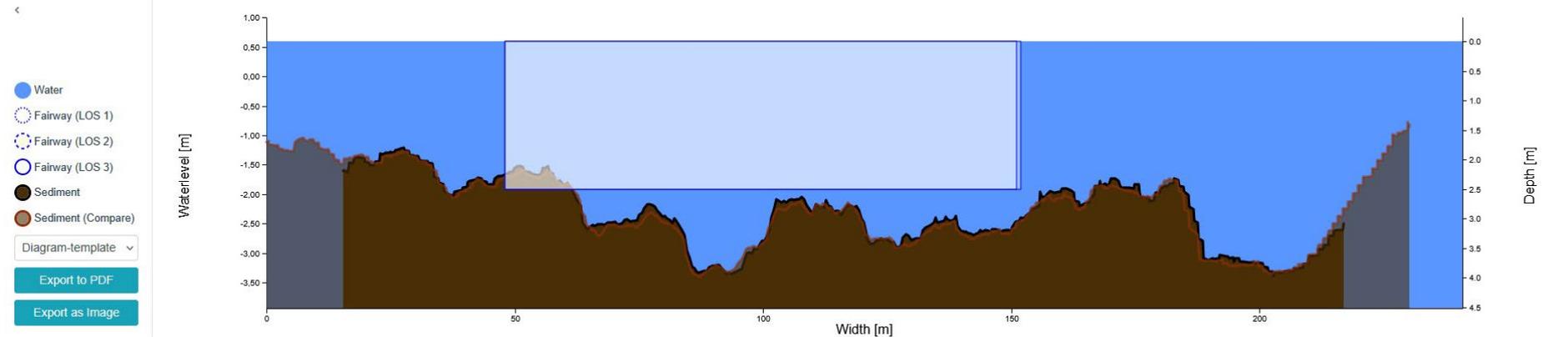
Frequency of bathymetric survey – Stable sections

Stable sections need less frequent surveys

- **Nyergesújfalu:** rocky riverbed, measured 2x/year, no significant bed changes over time

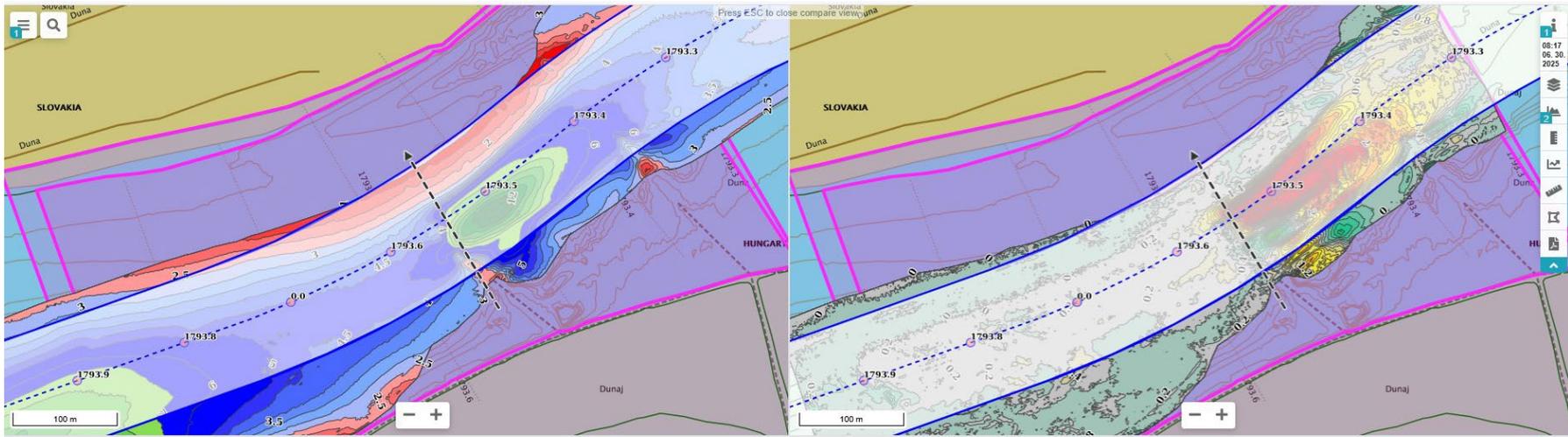


Fairwayprofile: Nyerges gázló (2025-05-12, 2020-09-29) WL: LDC (0,59 m)



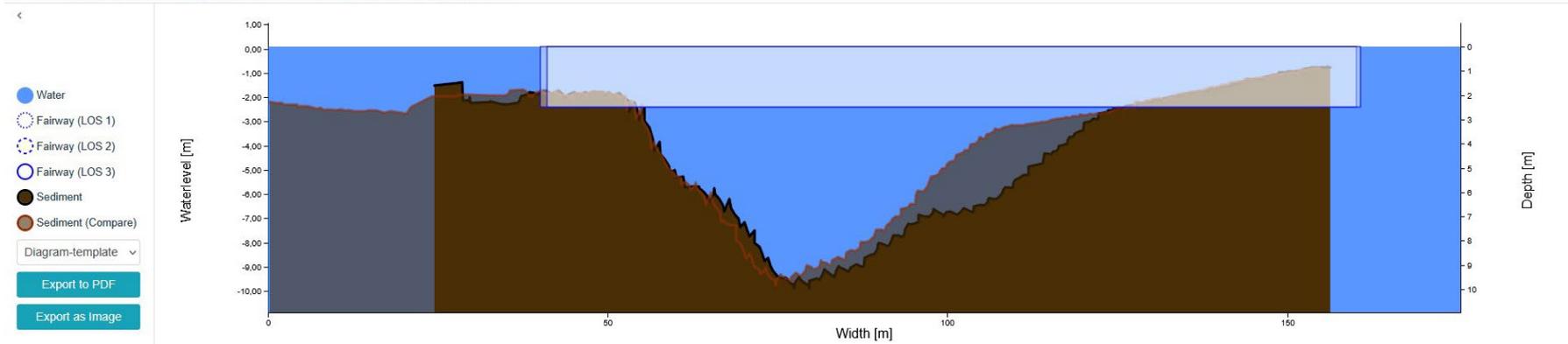


Bed Changes at Kolozsnéma in 4 Months



Fairwayprofile: Kolozsnéma 2 (2025-03-27, 2024-11-26) WL: LDC (0,08 m)

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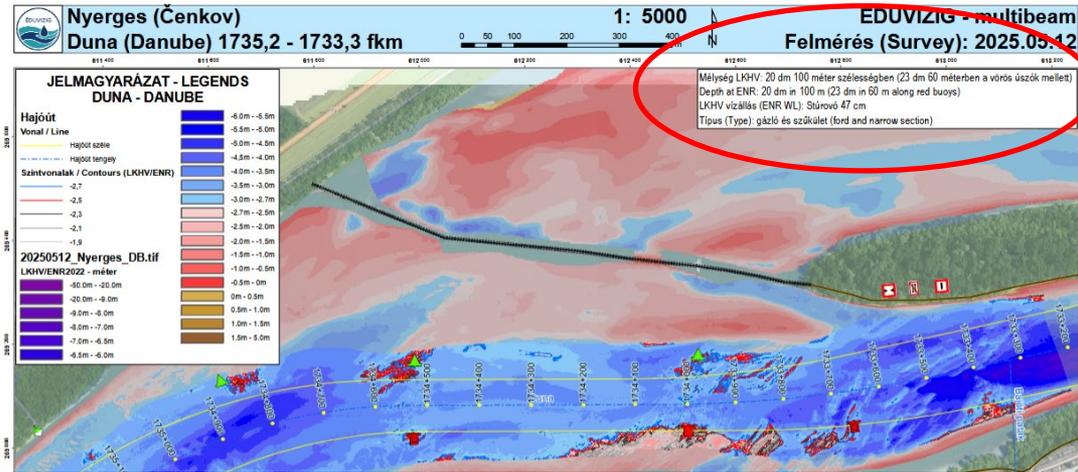


Additional information – a similar approach

Gázlőviszonyok a Dunán											
Kiadva: 2025. november 18. 08:27											
#	Fkm-től	Fkm-ig	mélysége [dm]	szélessége [m]	hossza [m]	információ	helye	mélysége [dm]	szélessége [m]	hossza [m]	helyszínrajz
1	1808.1	1807.6	26	120	500		piros úszó mellett	28	60	500	
2	1799.0	1798.7		100	300	hajóútszűkület					
3	1797.4	1796.6		80	800	hajóútszűkület					
4	1796.3	1795.5		110	800	hajóútszűkület					
5	1795.5	1795.2		80	300	hajóútszűkület					
6	1793.9	1793.3		70	600	hajóútszűkület					
7	1792.1	1791.6	22	100	500		zöld úszó mellett	27	50	500	
8	1789.2	1788.3	25	120	900		piros úszó mellett	27	80	900	
9	1786.7	1785.9	25	120	800		zöld úszó mellett	28	80	800	
10	1735.2	1733.3	21	100	1900		piros úszó mellett	24			
11	1732.6	1732.2	22	130	400		zöld úszó mellett	27			
12	1726.0	1724.4	26	120	1600						
13	1711.5	1710.7	22	100	800		piros úszó mellett	24			

Our bottleneck publication already provides additional fairway information for skippers
 → in practice, we are already applying a very similar approach.

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Mélység LKHV: 20 dm 100 méter szélességben (23 dm 60 méterben a vörös úszók mellett)
Depth at ENR: 20 dm in 100 m (23 dm in 60 m along red buoys)

Felhívjuk a hajósok figyelmét, hogy a mederfelmérés óta a meder, illetve a kiülés is változhatott.
 A hajóút pontos helyzetét a táblázattal bőjők mutatják.
 A felületet mélységek DB2022 viszintre redukálták.
 Please note that since the date of surveying, riverbed or fairway marking may have changed.
 Exact location of the fairway are shown by the buoys.
 Indicated depths are referred to ENR2022.



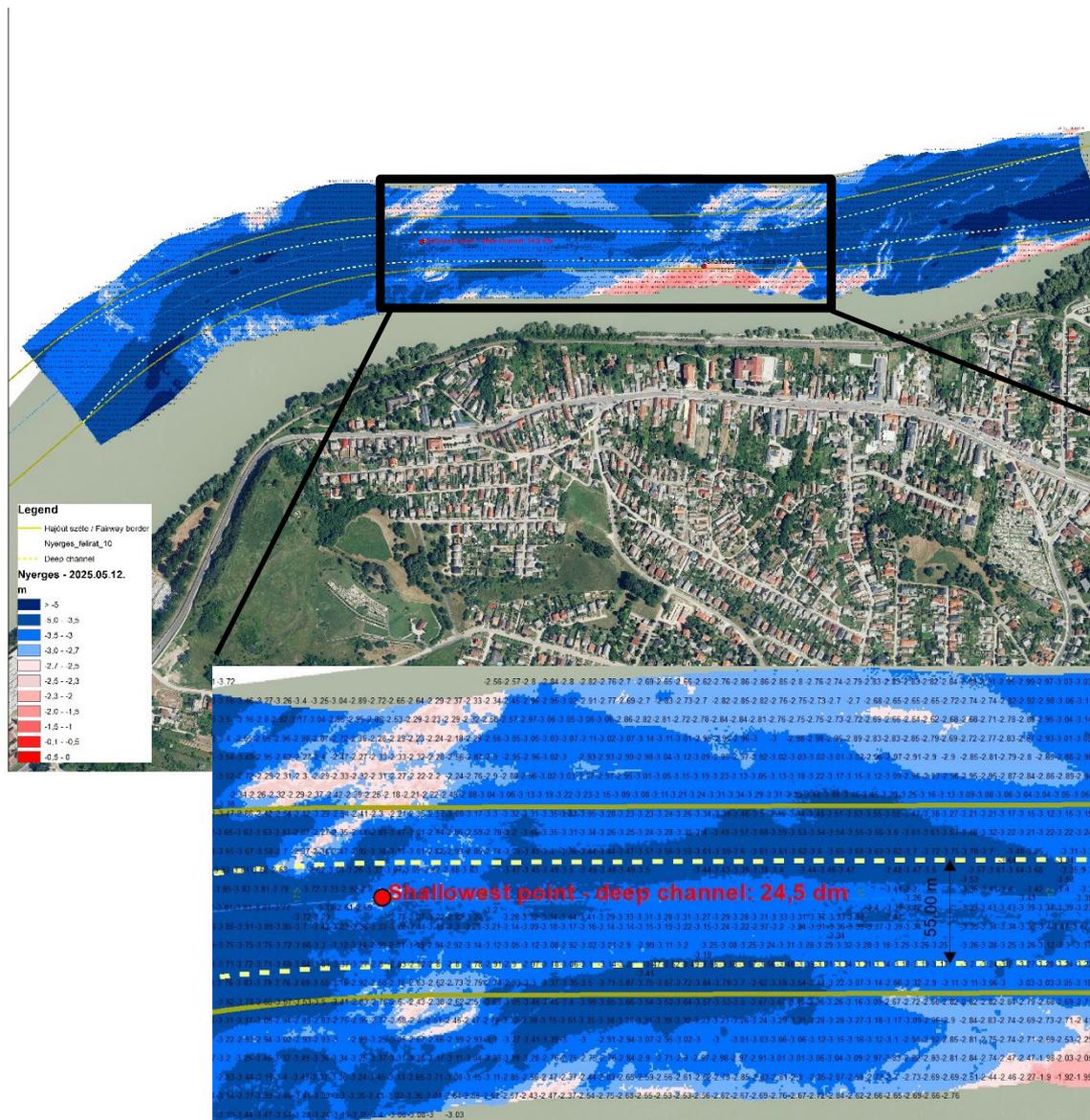


Next step: Designation of the deep channel - Nyerges

Based on the May 12, 2025 bathymetric survey:

Available fairway depth: **20 dm over 100 m width.**

Deep channel: **24,5 dm over 55 m width**





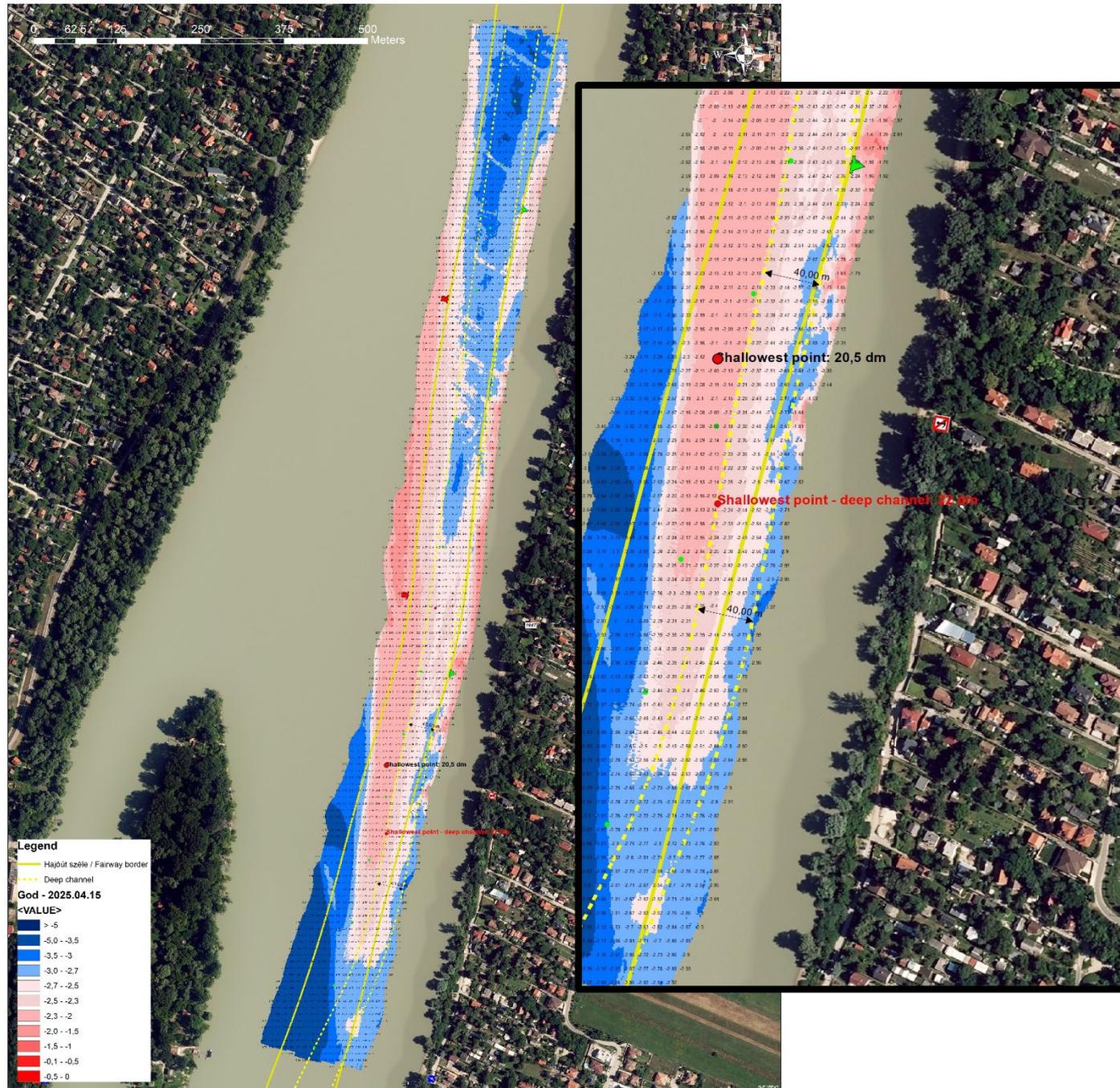
Göd

Based on the April 15, 2025 bathymetric survey:

Available fairway depth: **20,5 dm over 80 m width**

Deep channel **22 dm over 40 m width**

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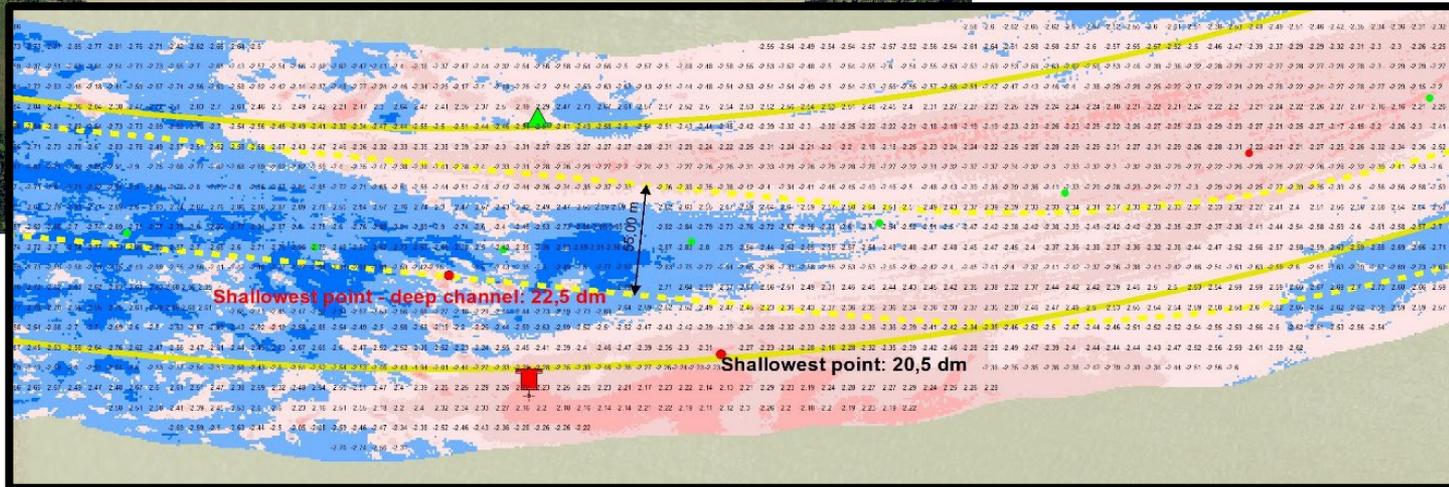
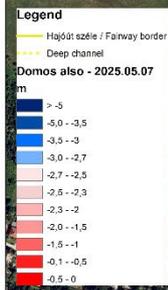
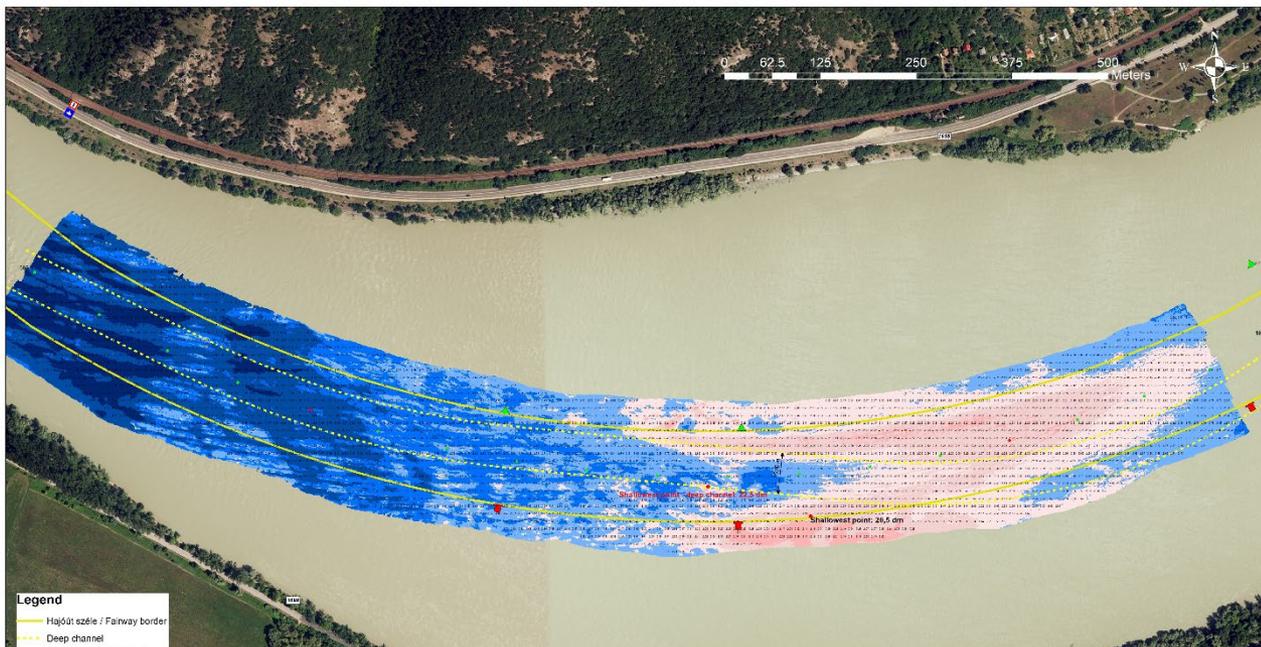
Lower Dömös

Based on the May 7, 2025 bathymetric survey:

Available fairway depth:
20,5 dm over 120 m width

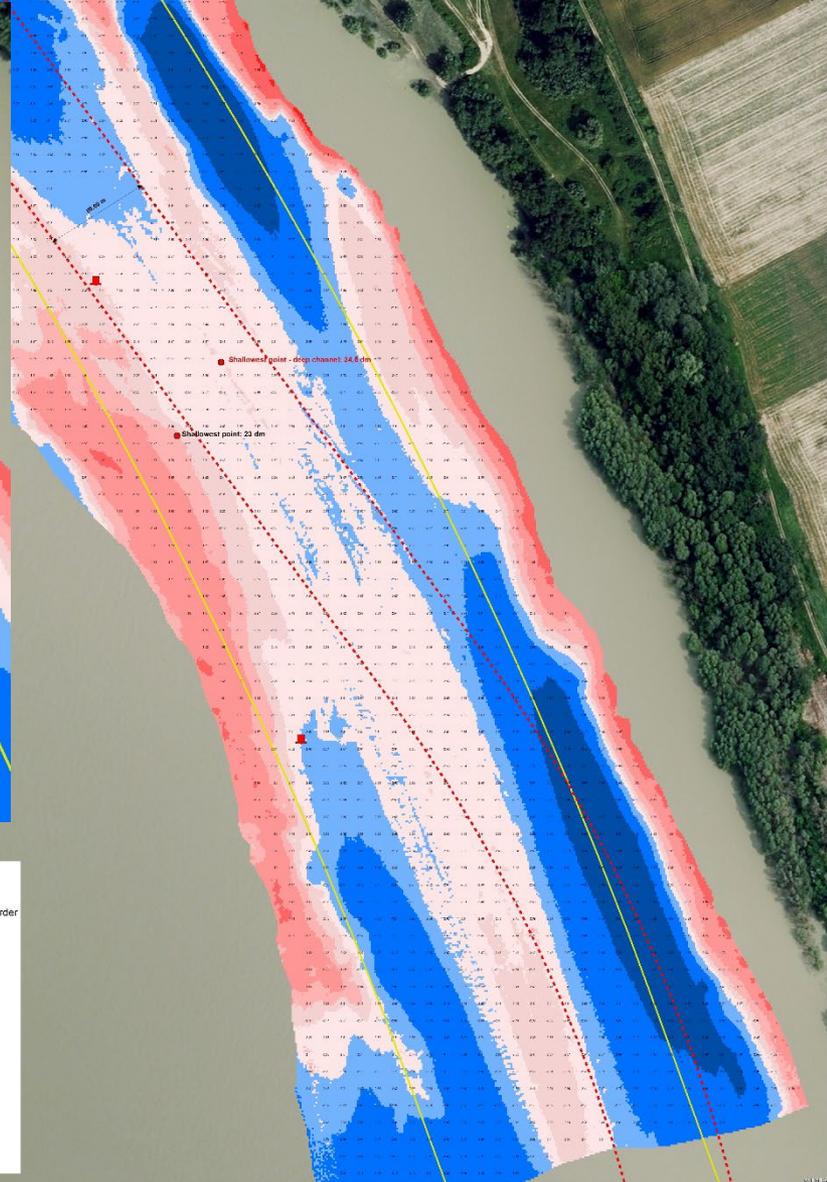
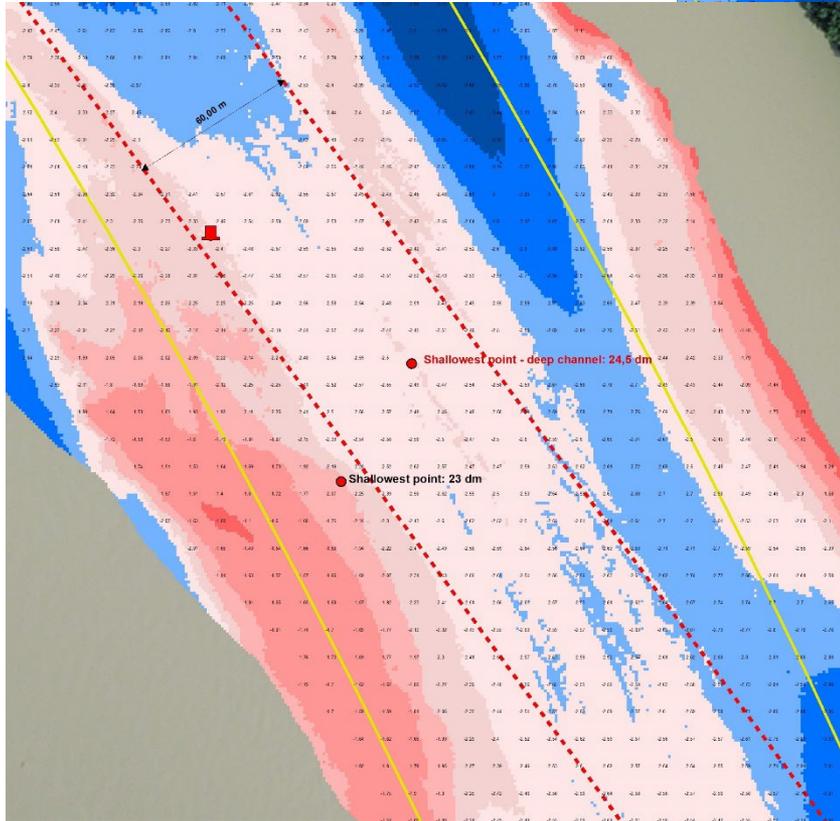
Deep channel:
22,5 dm over 55 m width

R=600 m!





Solt

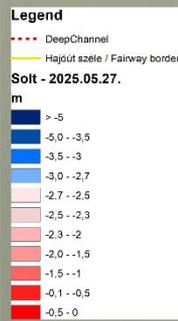


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Based on the May 27, 2025 bathymetric survey:

Available fairway depth:
23 dm over 80 m width

Deep channel:
24,5 dm over 60 m width





Government Proposal

**Achieve Good Navigation Status (GNS)
by 31 December 2030**

Status Assessment

The icon for 'Status Assessment' features a magnifying glass over a document with a bar chart, symbolizing data analysis and evaluation.

**Recommendation of
Short- and Medium-Term
Intervention Options**

The icon for 'Recommendation of Short- and Medium-Term Intervention Options' shows a document with checkmarks and a glowing lightbulb, representing ideas and approved measures.

Risk and Benefits

The icon for 'Risk and Benefits' includes a warning triangle, a document with checkmarks, and a magnifying glass, indicating the identification and analysis of potential issues and advantages.

Legislative Proposals

The icon for 'Legislative Proposals' depicts a stack of books and a gavel, signifying the legal and regulatory framework.

Risk and Benefits

The icon for 'Risk and Benefits' shows a balance scale, a warning triangle, and a shield with a checkmark, representing the weighing of risks against benefits and the need for protection.

Estimated Costs

The icon for 'Estimated Costs' features a calculator, a document with a bar chart, and stacks of gold coins, representing financial planning and budgeting.

**Identification of Responsible
Parties and Deadlines**

The icon for 'Identification of Responsible Parties and Deadlines' shows a document with checkmarks, a calendar, and a photo of people, representing the assignment of tasks and the setting of timeframes.

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Source: chatgpt



Proposal on short-term intervention measures

Improving the publication of bottlenecks and fairway depths

- Publication of fairway depths in **centimeters** and at **hourly** intervals on the official website
 - Notice to skippers –by Shipping Authority (ÉKM)
 - Informing relevant stakeholders appropriately about the change
 - Partly supported on the Danube FIS Portal
 - Implementation requires modifications to the national hydrological database

More flexible and adaptive regulatory environment within short time and at relatively low cost

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12	1726.0	1724.4	26	120	1600						
13	1711.5	1710.7	22	100	800		piros úszó mellett	24	70	800	

source: hydroinfo.hu



Proposal on short-term intervention measures

Increasing the frequency of riverbed survey linked to hydrological events

- Definition of critical sections
- Funding and human resource are not resolved

Updating the legal framework

- New Reference Water Levels,
- Review of the **safety distance values** depending on the quality of the riverbed material and clarification of their application



Source: marinetraffic



Deep channel

Designation of deep channel where technically feasible

1. New digital maps, designation ✓
2. Development of the relevant regulatory framework (set of rules) – under discussion
3. Testing applicability on pilot sections (e.g. Dömös)
4. After successful tests, update of notice of skippers, publish updated maps and geometry
5. Examination of maintenance dredging

Risks:

- Use of deep channel requires advanced navigation requirement (ECDIS)
- under the current iENC standard, such a display is not yet possible and cannot be encoded → FAIRway Danube II (WAMOS 2.0)
- The effectiveness of the deep channel strongly depends on the onboard navigation equipment.



Summary – Key Conclusions

Key Findings of the Assessment:

- Hungary already applies an adaptive and responsive bathymetric monitoring system
- Deep channel designation is feasible on the Hungarian section

Specific Finding in Assessed Sections:

- Limited depth gains even when fairway width is reduced
- Deep channel width varies between 40-55 m

Current Focus:

- Improving the publication of bottlenecks and fairway depths
- Applying legally supported temporary traffic regimes (Notices to Skippers)
- Updating the legal framework
- Increasing the frequency of riverbed survey linked to hydrological events
- Continue consultations with the Ministry of Transport regarding the implementation of the deep channel
 - Setting the rules,
 - share the concept with the stakeholders,
 - Start the pilot as soon as possible

Thank you for your attention!

