

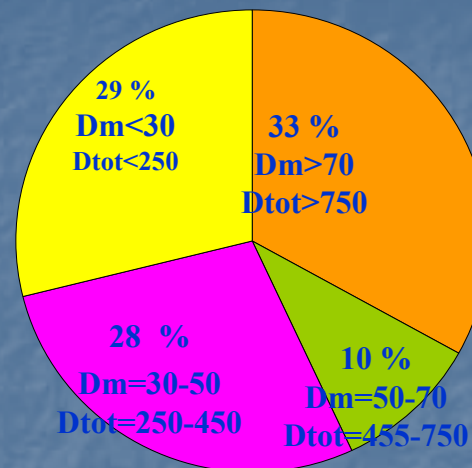
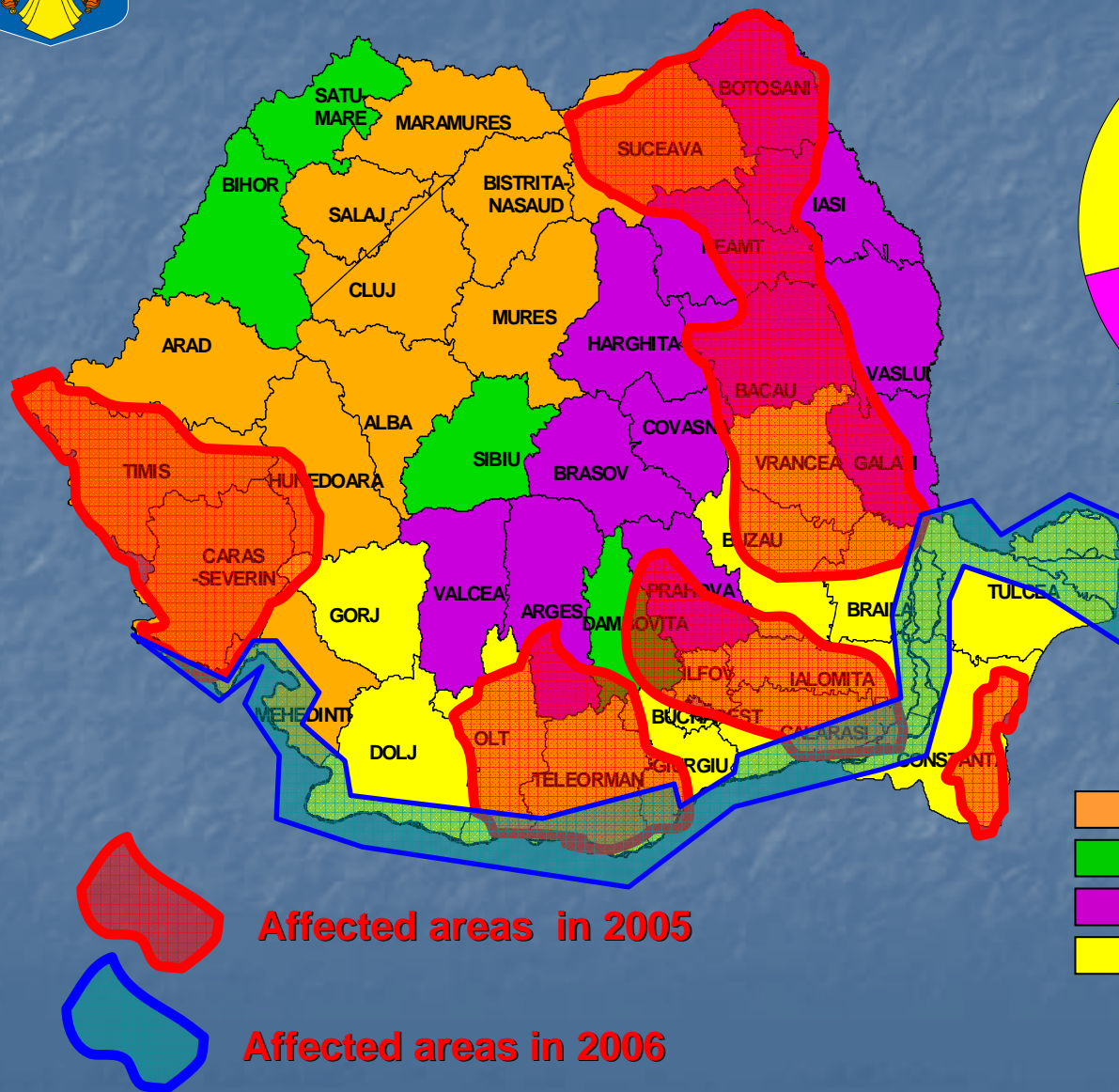


Administratia Nationala "Apele Romane"

**Proposed alternatives for
ecological restoration of Lower
Danube in Romania.**



Floods in Romania 2005-2006



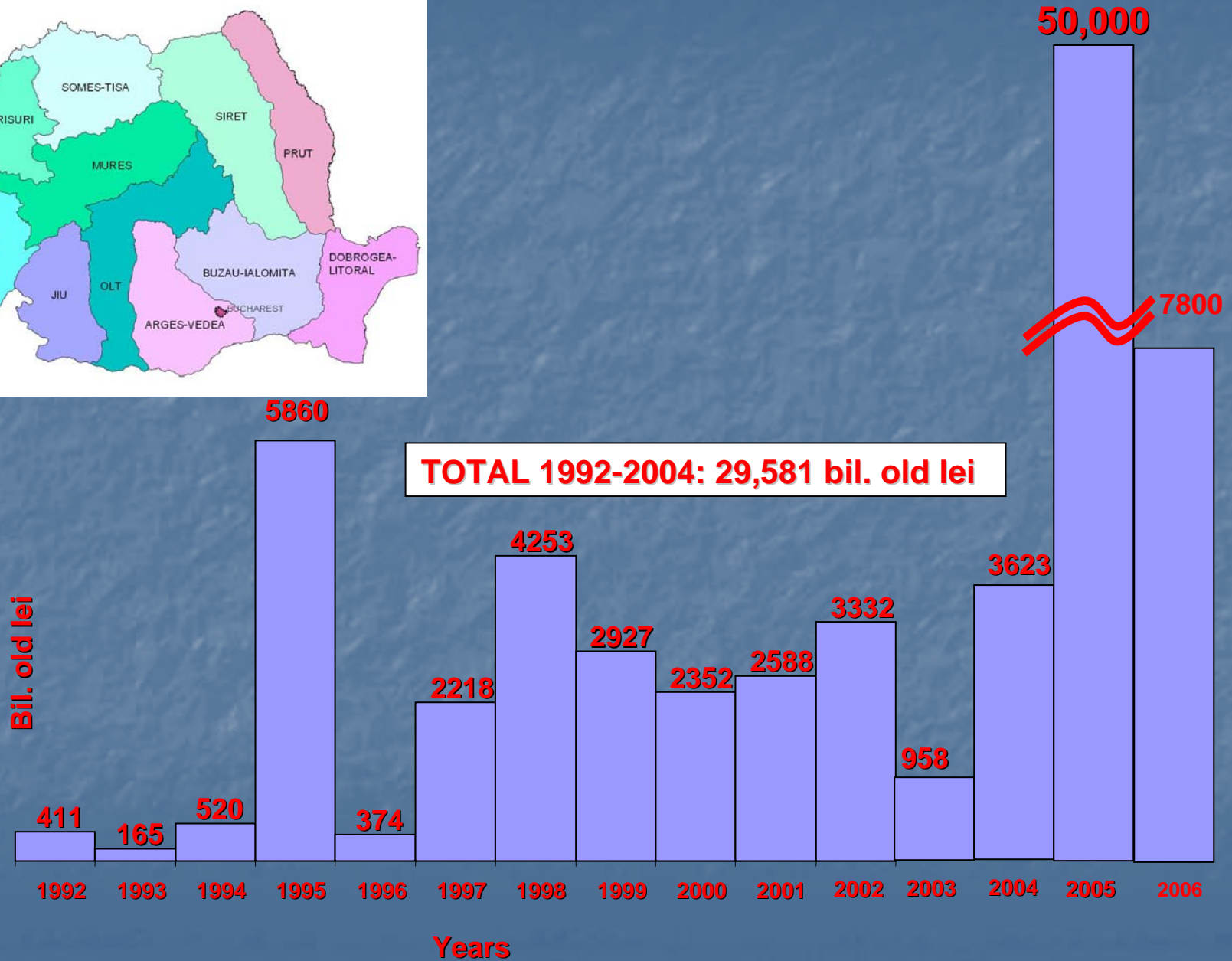
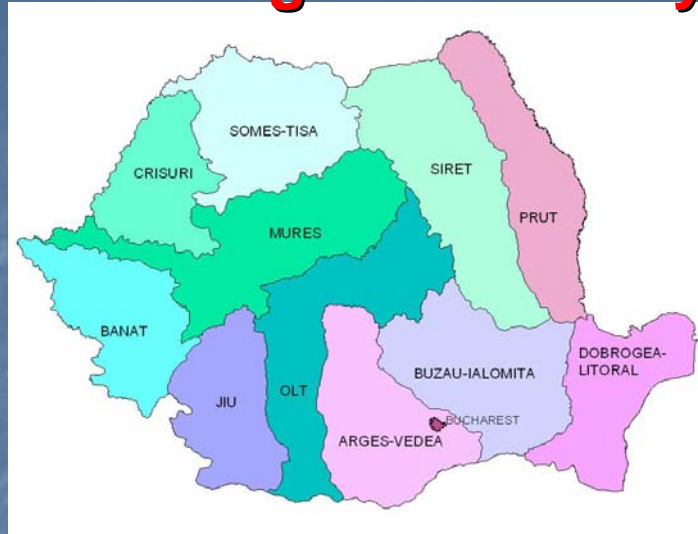
Dm – Average damages (billions lei)
 Dtot- Total damages (billions lei)

- Judete cu grad foarte mare de vulnerabilitate
- Judete cu grad mare de vulnerabilitate
- Judete cu grad mediu de vulnerabilitate
- Judete cu grad mic de vulnerabilitate

Affected areas in 2005

Affected areas in 2006

Damages caused by flooding during 1992-2006 period



Danube River Floods in 2006

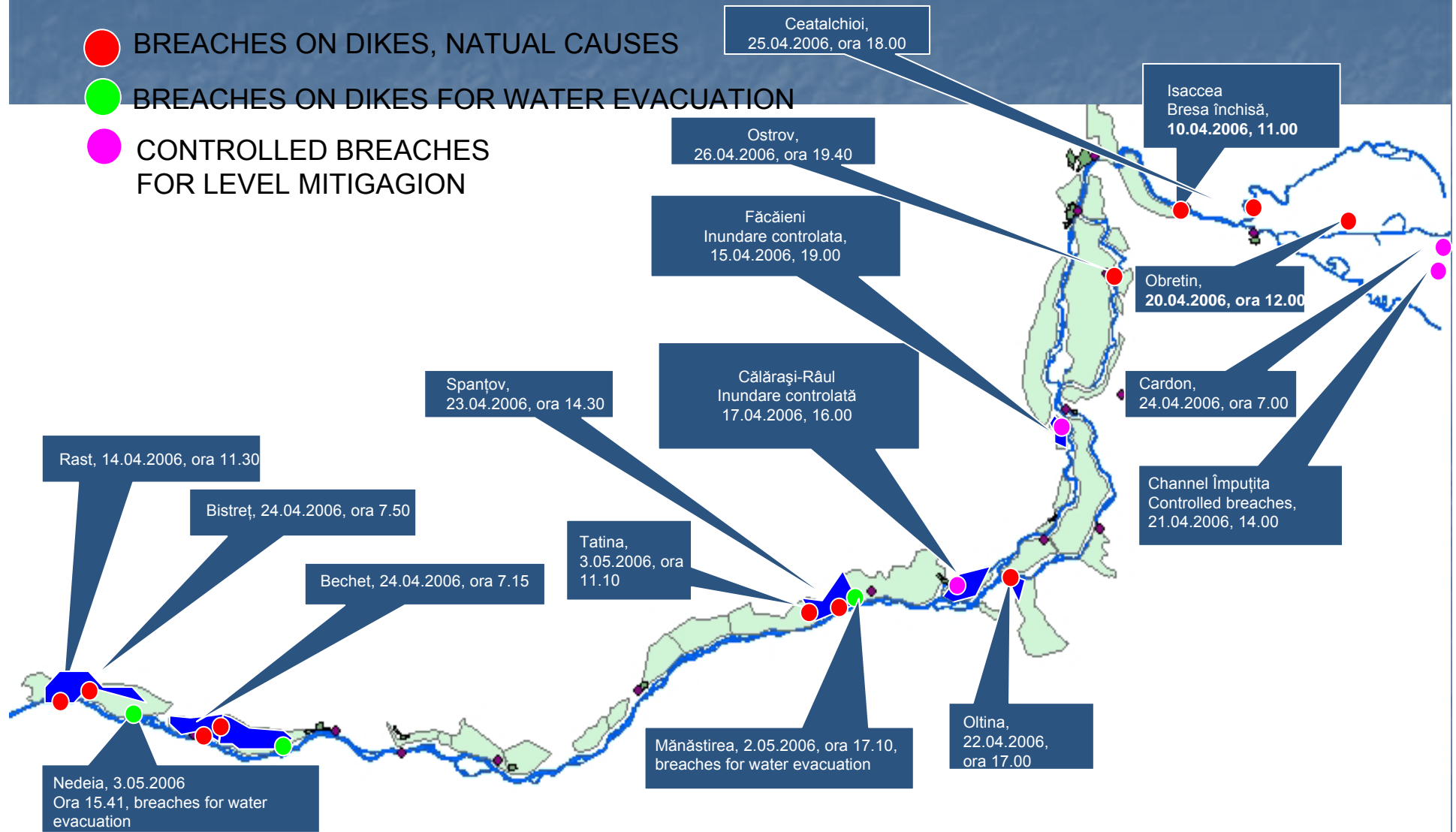
- Danube Flood from April-May 2006 had a peak of 15800 cm/s, the highest peak from 1840 - 2006.
- Romanian flood defence infrastructure has 1200 km dykes.
- The Flood defence activities based on three scenarios : 13500 cm/s; 15000 cm/s and 16000 cm/s
- The increasing of the level at Bazias Station at the same flow
- For reducing of the level and the damages and cut the peak of floods was necessary to open the dyke in three points: Rast, Calarasi – Raul si Facaieni – Vladeni.
- The effect of these controlled flooding have been protection of the cities Calarasi, Braila si Galati.
- The evacuated people was 15000

DANUBE 2006

● BREACHES ON DIKES, NATUAL CAUSES

● BREACHES ON DIKES FOR WATER EVACUATION

● CONTROLLED BREACHES FOR LEVEL MITIGAGION



Section	Design Level (cm)		Maxim Level before 2006 (cm)	Level in 2006 (cm)			Diferent Level 2006 – Maxim Level 1970/1981 (cm)	Diferenta nivel 2006 – nivel de proiectare cu diverse probabilitati (cm)	
	1	5 %		Inregist rat	Reconstituit	Diferenta		1 %	5 %
Gruia			862 / 1981	899	899	0	+37		
Calafat	782	734	802 / 1981	861	865	+4	+59	+79	+127
Bechet			787 / 1981	845	857	+12	+58		
Corabia	773	711	756 / 1970	801	812	+11	+45	+28	+90
Giurgiu	804	750	795 / 1970	822	830	+8	+27	+18	+72
Oltenita	794	741	772 / 1970	809	815	+6	+37	+15	+68
Călărași			703 / 1970	737	765	+28	+34		
Cernavodă	690	644	708 / 1970	736	760	+24	+28	+46	+92
Hârșova	678	641	727 / 1970	764	792	+28	+37	+86	+123
Brăila	678	619	639 / 1970	699	724	+25	+60	+21	+80
Tulcea	458	411	435 / 1970	438	450	+12	+3	-20	+27

Nivelurile maxime inregistrate si reconstituite in diferite sectiuni de pe Dunare la viitura din aprilie - mai 2006 comparativ cu cele mai mari niveluri inregistrate dupa indiguirea Dunarii - si cu nivelele de proiectare a digurilor

Main elements and principles for rearranging of Danube River in Romania

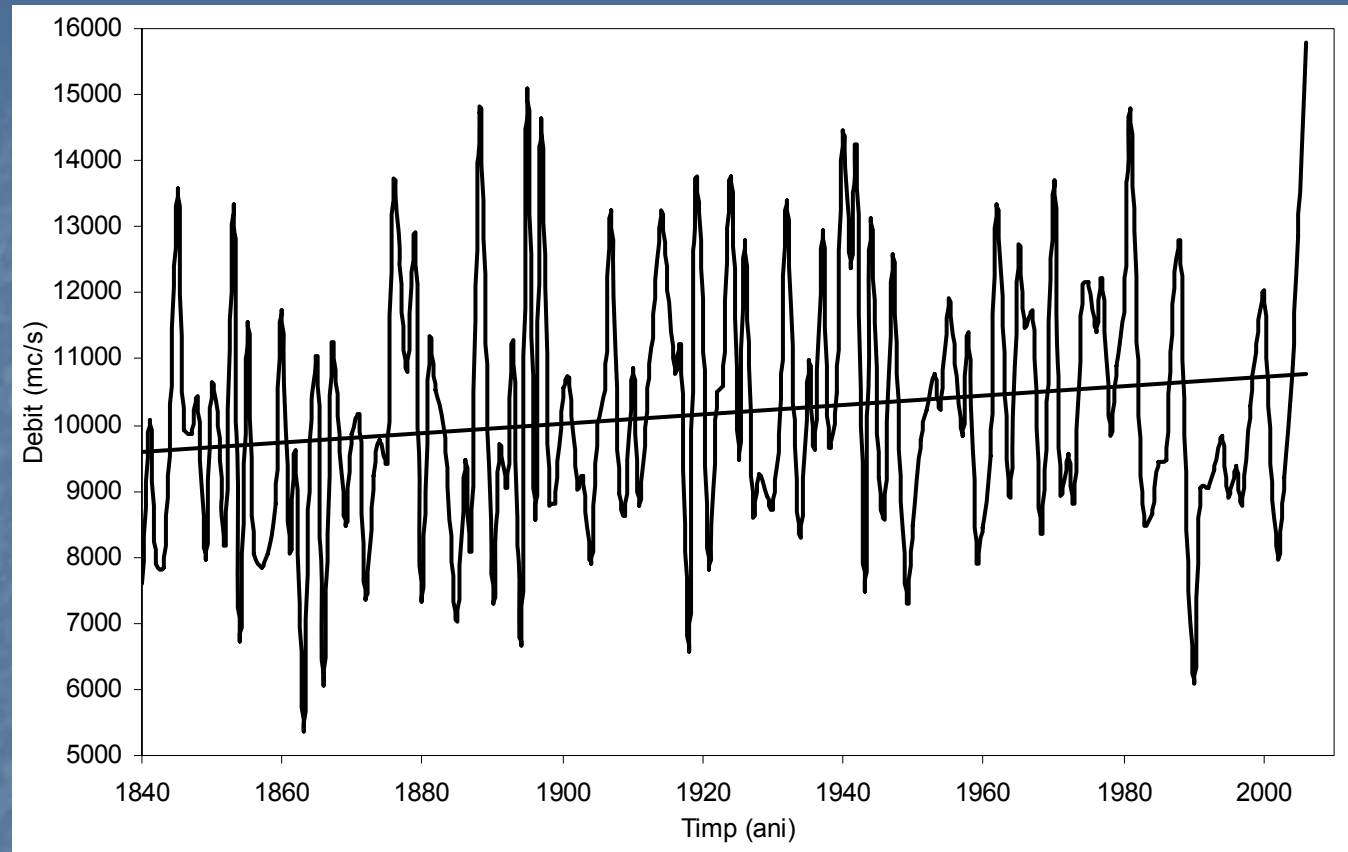
1) Exchanging of the hydrological regime :

- increasing of level of River Danube in Bazias section and the level of Black Sea in Sulina Section;
- the effect of hydro technical works from upper stream and from down stream of Danube River Basin

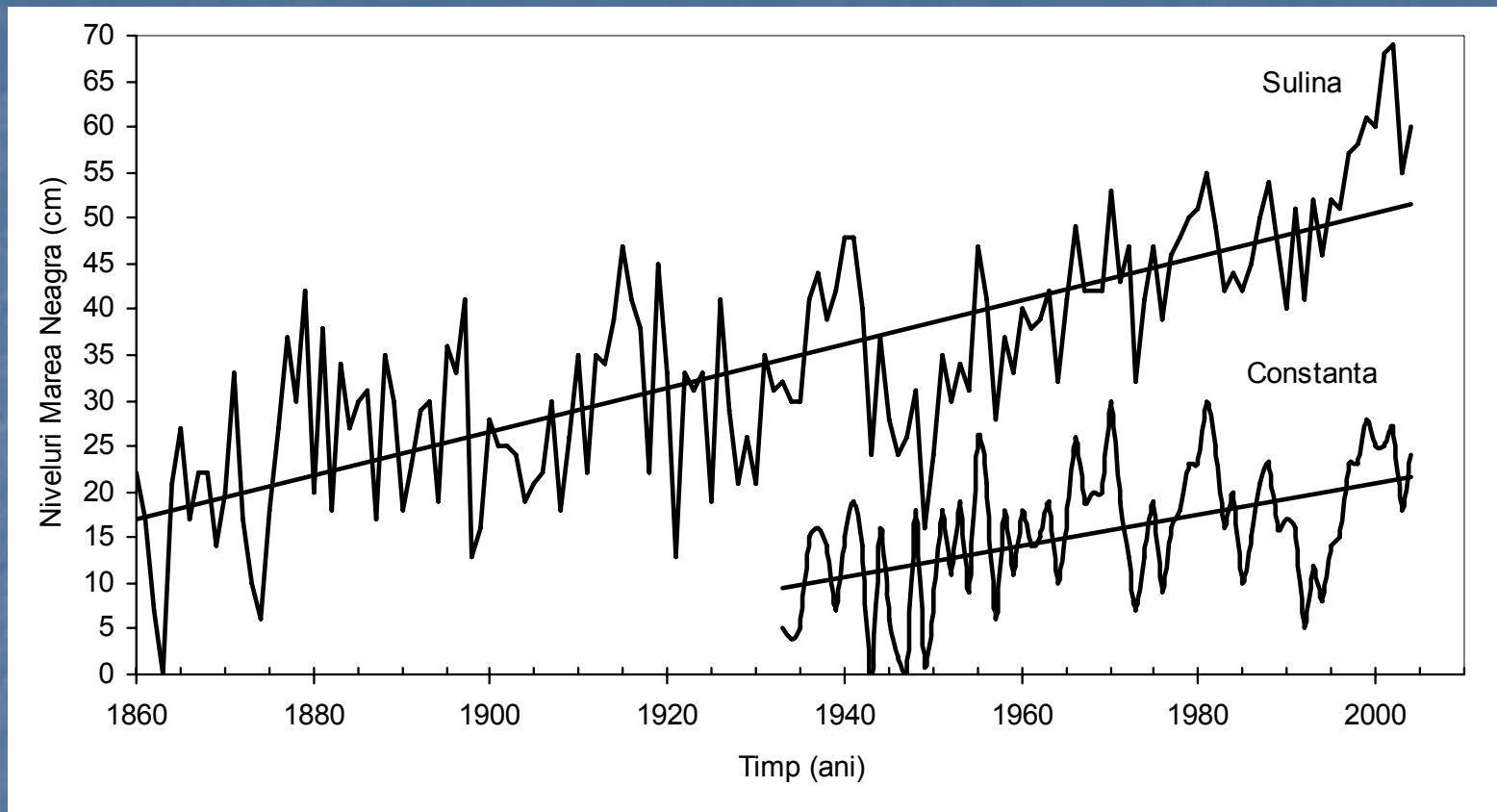
2) Applying the WDF and all European Directive regarding environmental protection

3) Reduce the floods damages and protect the people

4) Creating the condition for Sustainable Developing of Danube area

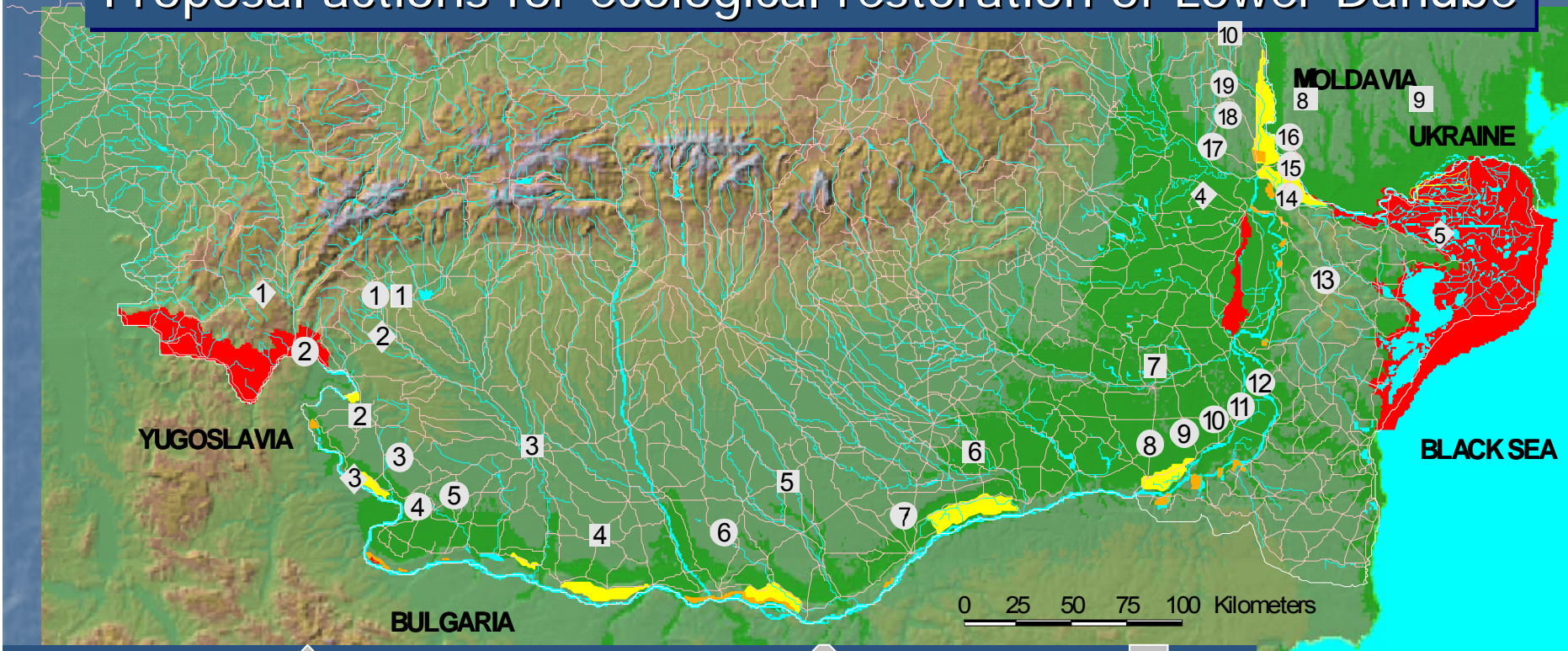


Variation of yearly maxim flow on Danube River at Bazias station and the trend in 1840-2006



Variation of yearly average level of Black Sea in Sulina and Constanta stations and the trend in 1860-2004

Proposal actions for ecological restoration of Lower Danube



Arii protejate existente

1. Parcul Natural Portile de Fier (115656ha)
2. Padurea Starmina (310 ha)
3. Rezervatia Naturala Ciuperceni-Desa (200 ha)
4. Insula Mica a Brailei (17529 ha)
5. Rezervatia Biosferei Delta Dunarii (580000h)

Zone propuse pentru a fi studiate in vederea declararii lor ca arii protejate

1. Hanova –Ostrovul Corbului (1960 ha)
2. Ostrovul Mare -Ostrovul Turcesc (230 ha)
3. Ciuperceni-Rast (2590 ha)
4. Pietris (26 ha)
5. Vana (105ha)
6. Sector Dunare km 587-636 (4863ha)
7. Cama Dinu (196 ha)
8. Lacul Bugeac (1400ha)
9. Lacul Oltina (2509 ha)
10. Lacul Mirleanu (550ha)

11. Lacul Vederoasa (230ha)
12. Lacul Baci (200ha)
13. Lacul Hazarlac (268ha)
14. Mlastina Peceneaga (40ha)
15. Iazurile Turcoaia (310ha)
16. Lacurile Sarat si Slatina (150ha)
17. Mlastina Macin-Smardan (230ha)
18. Lacul Jijila (2500ha)
19. Lacul Brates (211ha)

Zone de reconstructie ecologica propuse pentru a fi studiate

1. Campia Blahnitei-Insula Corbului (1981ha)
2. Garla Mare-Salcia (681ha)
3. Incinta-Bistret-Nedia-Jiu (1080ha)
4. Amenajarea complexa Potelu (23330ha)
5. Amenajarea complexa Suhaia (17490ha)
6. Balta Greaca (33819ha)
7. Insula Calarasi-Rau (13050ha)
8. Complex Crapina (10000ha)
9. Complex Pardina (27052ha)
10. Lunca Prutului inferior (32400ha)

LEGEND



Cursuri de apa

Drumuri

Arii protejate existente

Arii protejate propuse

Zone propuse pentru reconstructie

Conclusion:

The ecological restoration infrastructure for the Lower Danube River has to be in accordance with :

- The new Romanian National Strategy for Flood Management adopted in 2005
- The new European Flood defense Directive
- Flood Action Program approved by ICPDR
- EU Directive- Natura 2000
- All other ecological requirements.....