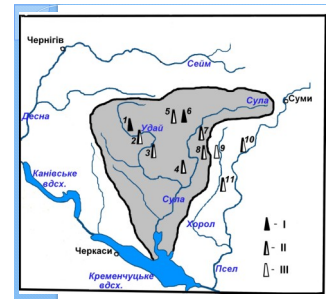
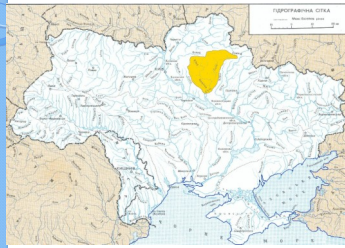


LAND COVER CHANGES IN THE SULA RIVER BASIN WITH INTENSIVE OIL EXTRACTION

Vladimir Starodubtsev

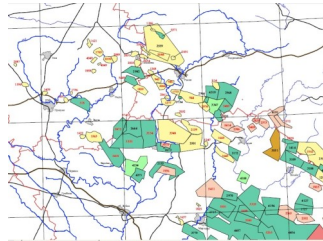
National University of Life and Environmental Sciences of Ukraine
Brasov - 2015

Basin of the Sula river on the map of Ukraine

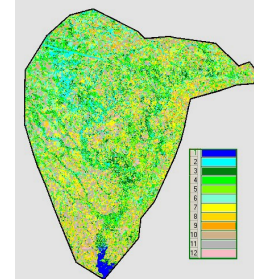
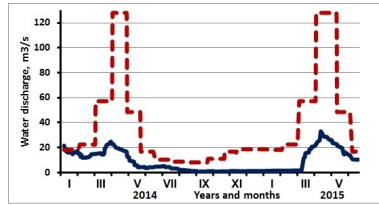


Oil, gas & condensate fields

Prospective oil and gas fields



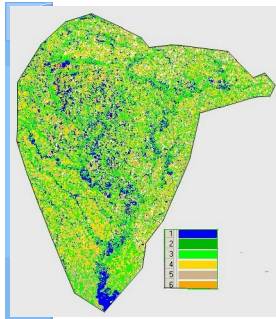
Perennial and actual hydrograph of the Sula river



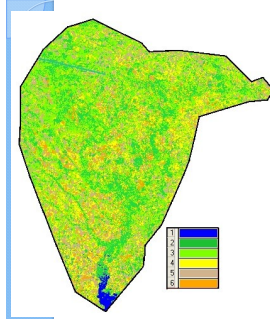
Sula river basin -1977 - classified - 12 classes

Land cover changes in the Sula basin

Name of lands	Years			Change of areas		
	1977	1990	2011	1977/1990	1990/2011	1977/2011
Water bodies and bogs	354175	243863	207371	- 110312	- 40132	- 150444
Waterlogged meadows	302526	155610	181872	- 146916	+ 26262	+ 120654
Waterlogged meadows	630038	780524	781975	+ 150486	+ 1451	+ 151937
Total water+wet landscapes	1286739	1179997	1167578	- 106742	- 12419	- 119161
Dry landscapes (dry meadows, forests and fields)	954144	1060886	1073305	+ 106742	+ 12419	+ 119161
Total	2 240 883	2 240 883	2 240 883	-	-	-

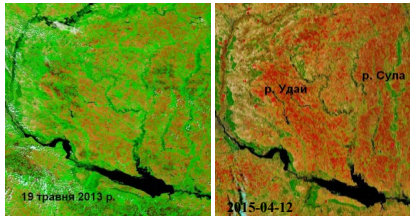


Sula river basin - 1990 - classified - 6 classes



Sula river basin - 2011 - classified - 6 classes

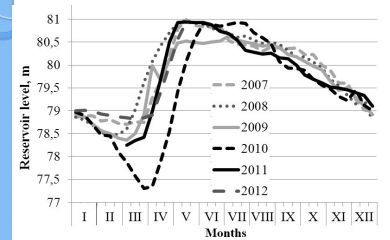
Sula basin in high-water & low-water years (Terra)



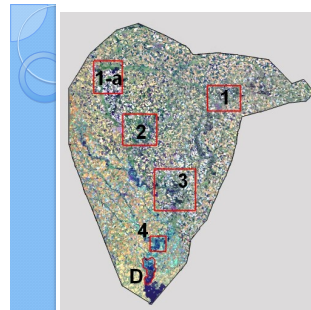
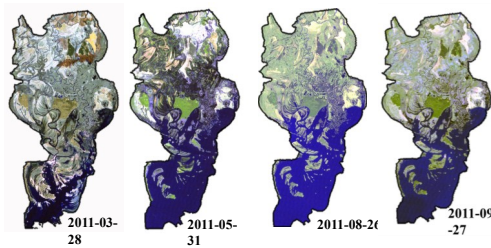
Shallowness in the Sula basin



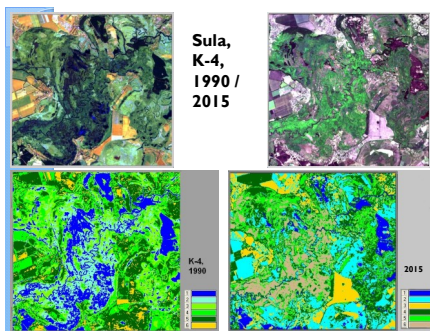
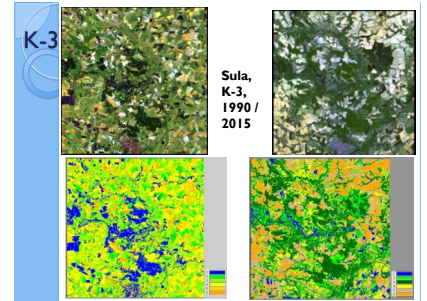
Kremenchuk reservoir level dynamics



Seasonal dynamics of deltaic landscapes



Key areas in the Sula basin



Key-4. Land cover changes, ha

Key 4	1990	2015
Water + turf bogs	2792	855
Over wet landscapes	2160	3675
Fields & settlements	2805	1651
Forest, gardens & shrubs	3600	4288
Wet meadows	3007	2598
Dry meadows	604	1902
Total	14968	14969

Chemical components of the Sula river water in delta (25.05.2012)

Components	Marking units	Location of sampling			PMC № 4630-88
		Sula r., v. Guroshino	Sula r., v. Pogrebnyky	Kryva Ruda r., v. Prutenky	
pH	o.p.H	8,55	8,61	9,02	6,5-8,5
Dry deposit	mg/l/m³	518	500	1204	1000
COD	mg/l/m³	44,55	32,37	49,36	15,0
Ca	mg/l/m³	96,19	94,19	74,15	-
Mg	mg/l/m³	32,63	25,54	44,99	-
Na+K	mg/l/m³	28,98	60,26	319,93	350,0
Cl	mg/l/m³	29	28	237	-
SO4	mg/l/m³	54	98	70	500
NH4	mg/l/m³	0,81	0,98	1,14	2,0
NO3	mg/l/m³	1,07	0,79	0,96	45,0
NO2	mg/l/m³	0,04	0,03	0,04	3,3
P	mg/l/m³	0,99	0,63	1,08	3,5
Fe total	mg/l/m³	0,07	0,07	0,19	0,3
F	mg/l/m³	0,26	0,26	0,63	0,7
Oil products	mg/l/m³	0,034	0,039	0,042	0,3
Mn	mg/l/m³	0,139	0,128	0,417	0,4
O dissolved	mg O₂/l/m³	4,36	4,24	1,60	Не менше 4,0
BOD₅	mg O₂/l/m³	4,40	3,12	5,16	2,25