Dartmouth Flood Observatory
Flood Analysis Report 2003-085

Event:	DFO-2003-085, Southern Russia	Previous Events:	
Duration:	April 1-May 14, 2003, 44 days	News Notes:	See next page
Cause	11, Snowmelt. Warm temperatures melt snow while most of the rivers are still covered with ice.	Locations:	From news: Volgograd, Rostov and Voronezh regions.
Region Affected:	1,435,000 sq. km	Watershed:	1,854,000 sq. km; Volga and Don Rivers and their tributaries.
Severity:	3	GIS vectors:	See next page
Magnitude:	136.0		

Figure 1. Location of contributing watershed (yellow line) and area affected by flooding (red line)

Causation categories are: 1, thunderstorm; 2, precipitation band; 3, squall line; 4, stationary front; 5, mesoscale convective complex; 6, convective cloud cluster; 7, tropical cyclone; 8,extra-tropical cyclone; 9, stationary synoptic front; 10, ITCZ wave disturbance; 11, snowmelt; 12, rain and snowmelt; 13, ice jam or ice break-up; 14, dam break; 15, avalanche.
Severity classes: 1, large, 20%-5% exceedance probability – and/or significant damage to structures or agriculture; 2, very large, 5%-1%; 3, extreme, <1%.
Flood Magnitude: {Natural Log duration (days)} x {severity class} x {sq rt region affected (sq. km)} x .01.
Duration, region affected, and intensity are estimates from news and government reports.
Work supported by: the NASA Office of Earth Science and by the Dartmouth College Geography Department, Hanover NH 03755 USA
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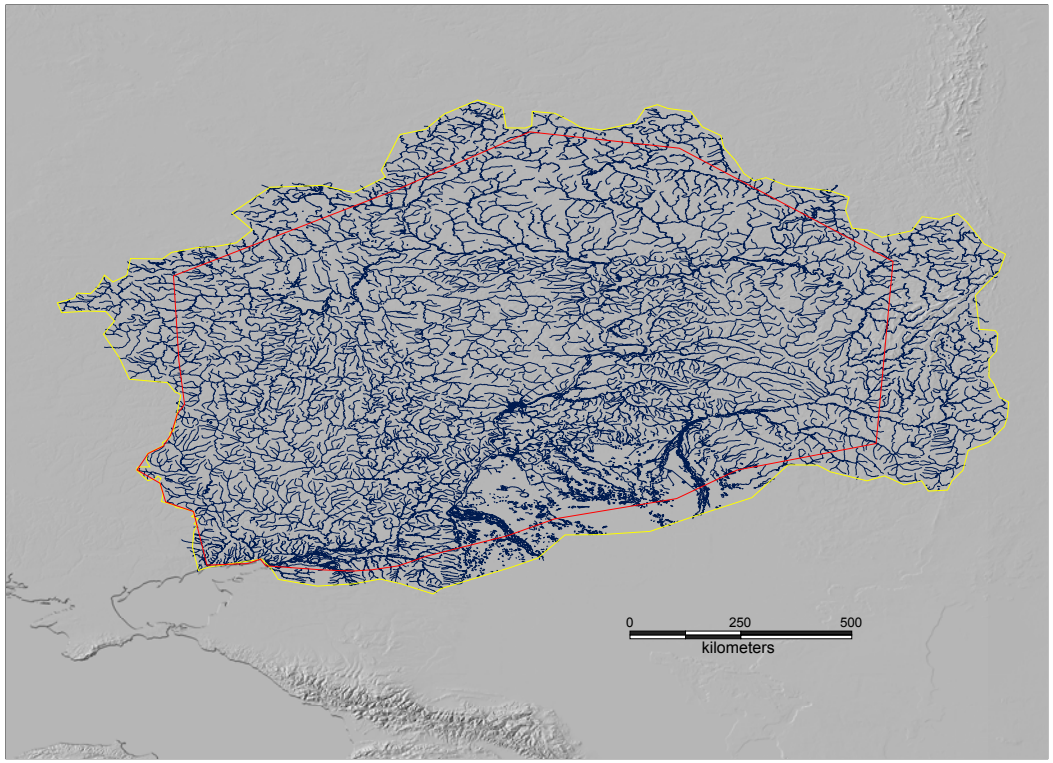


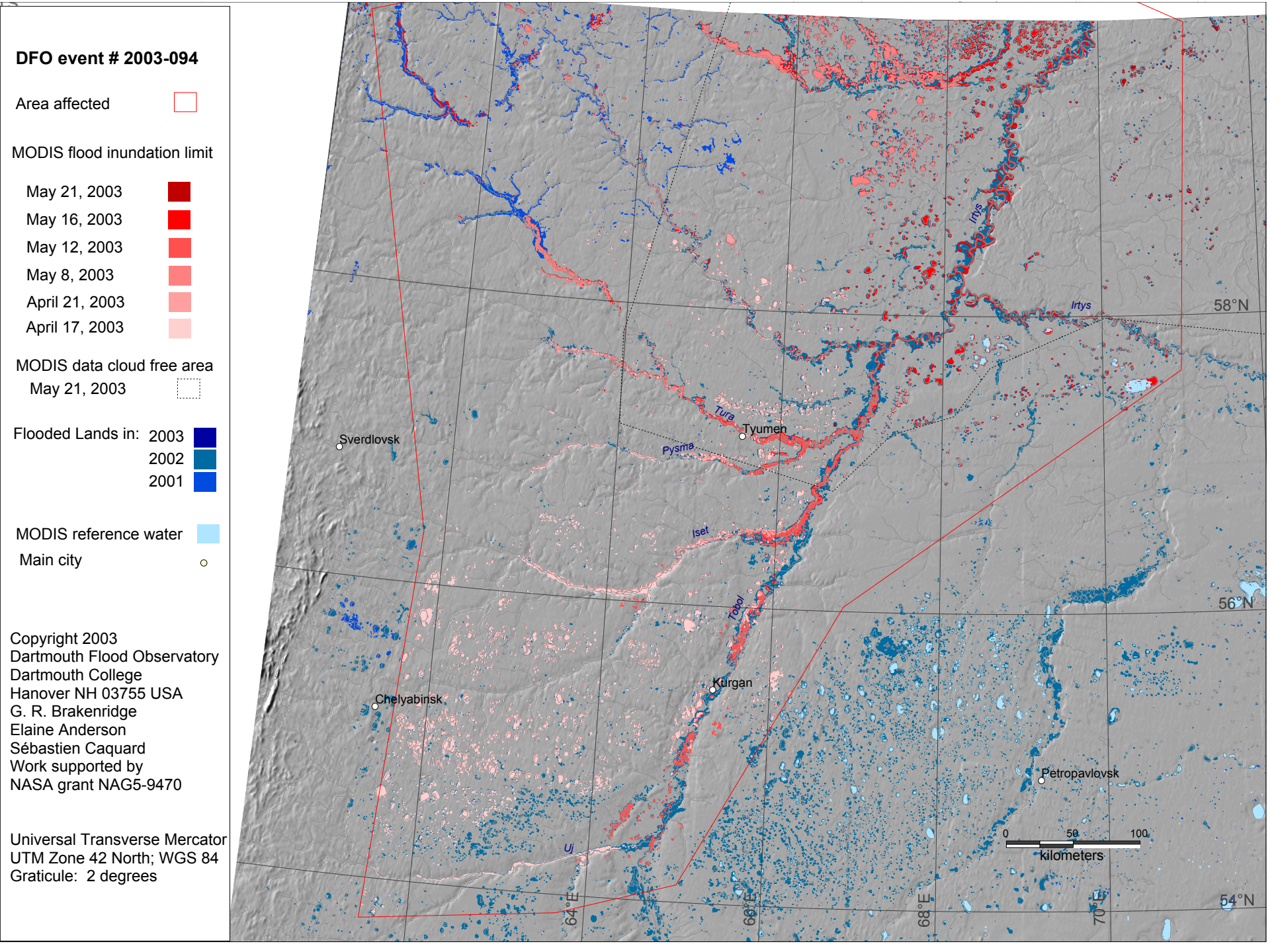
Figure 2. Flood-generating watershed for this flood event.

List of DFO GIS vectors for this event:

20030970805Volgo085M2.23
20030970805Frolovo085M2.19
20031000835Volgo085M2.27
20031020820Volgo085M2.22
20031040810Volgo085M2.20
20031040950Volg085M2a.25
20031060755Volga085M2.19
20031070840DonDnepr095M2.22
20031090825Volga085M2.23
20031090830Don085M2.25
20031100730Urals085M2.18
20031110815UVolga085M2.23
20031180820LDon085M2.27
20031180820UVolga085M2.33
20031260915UVolga085Ma2.35
20031270815Volga085M2.30
20031271000UVolga085Ma2.35
20031340820UVolga085M2.37

News Notes:

At the beginning of April 2003 spring flooding began in the Kletsky district of the Volgograd region in southern Russia. As warm temperatures melted snow while the rivers were still covered with ice the flooding spread to 18 other districts within Volgograd. Several other regions were also affected including Rostov, Voronezh, Lipetsk, Orenburg and Saratov. During the floods 74 towns and villages were inundated, over 5,200 houses were inundated and 8,000 people were evacuated. Over 44 bridges and 27 dams were damaged. Over 300,000 hectares of farmland in Volgograd were inundated, half of the winter crops were destroyed. By April 24 the floods in the Volgograd Region were reported to be the “strongest in the past 100 years”.


DFO event # 2003-094
Area affected
MODIS flood inundation limit
May 21, 2003
May 16, 2003
May 12, 2003
May 8, 2003
April 21, 2003
April 17, 2003
MODIS data cloud free area
May 21, 2003
Flooded Lands in: 2003
2002
2001
MODIS reference water
Main city
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Dartmouth Flood Observatory
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Universal Transverse Mercator
UTM Zone 42 North; WGS 84
Graticule: 2 degrees
Sverdlovsk
Tyumen
Chelyabinsk
Kurgan
Petropavlovsk
Tura
Pysma
Iset
Tobol
Uj
Irtys
Irtys
58°N
56°N
54°N
64° E
66° E
68° E
70° E
0
50
100
kilometers