

SEEWIND: ICE & Rocks III - Wind Energy in Complex Terrain
Zadar / Croatia, 5th and 6th of May 2010

**MAIN WIND STREAMS, HARD ROCKS
AND ICING IN SERBIA**



Presented by
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MAIN WIND STREAMS IN SERBIA

PREVAILING WIND DIRECTIONS

Vlasina Region, on the South-East of Serbia

Pcinjski Administrative District,

Municipality of *Surdulica*, ~350 km SSE from Belgrade



MAIN WIND STREAMS IN SERBIA

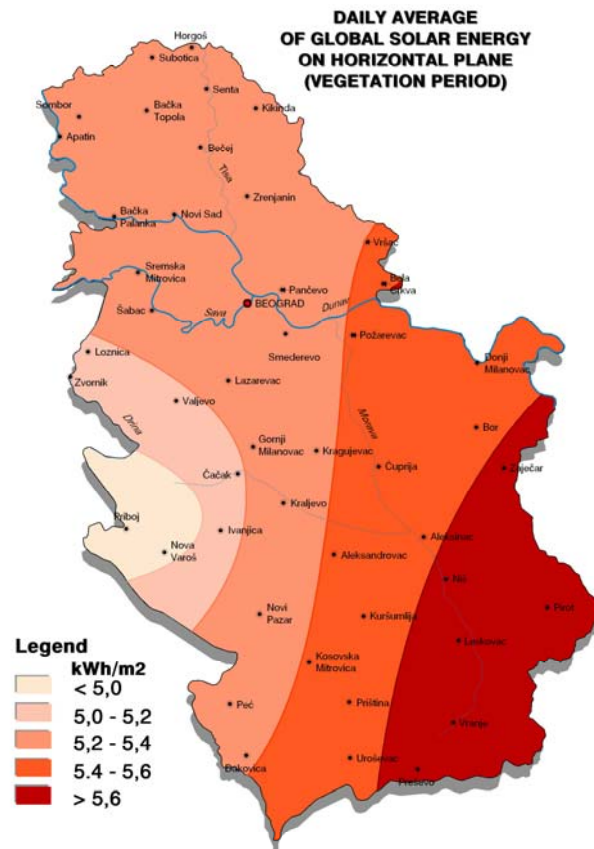
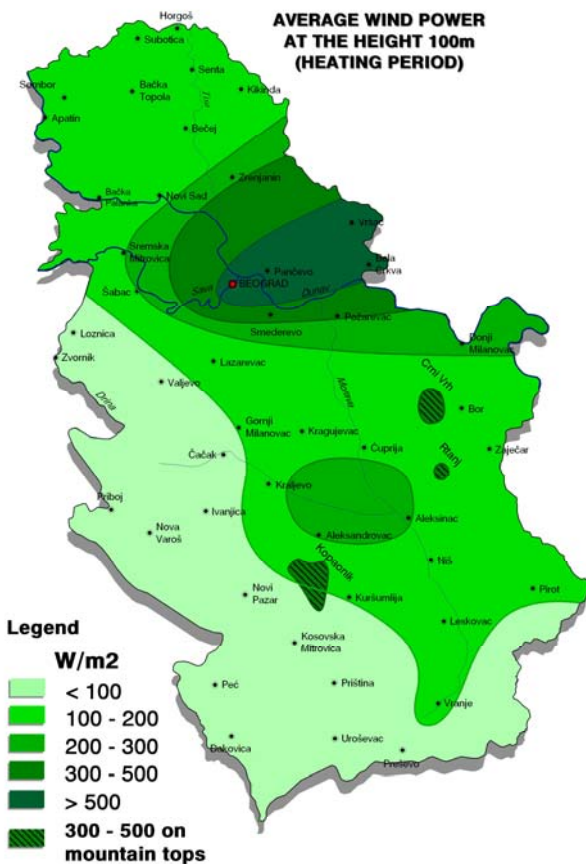
- NW wind streams (caused by global-regional atmospheric circulation) in warmer period of the year
- SE & E wind streams (local wind system, Kosava) in colder period of the year
- NW & N wind streams (local wind system, Vardarac) in colder period of the year that influence southern areas of Serbia

NOTE: There are other different locations with specific micro-climatology and local circulation, caused by topography – orography, roughness, obstacles, frictions, etc.

Region Vlasina (Vardenik – Vilje Kolo) is one of the examples.

CLIMATE RESOURCES IN SERBIA

Complementary Regime of Wind and Solar Energy



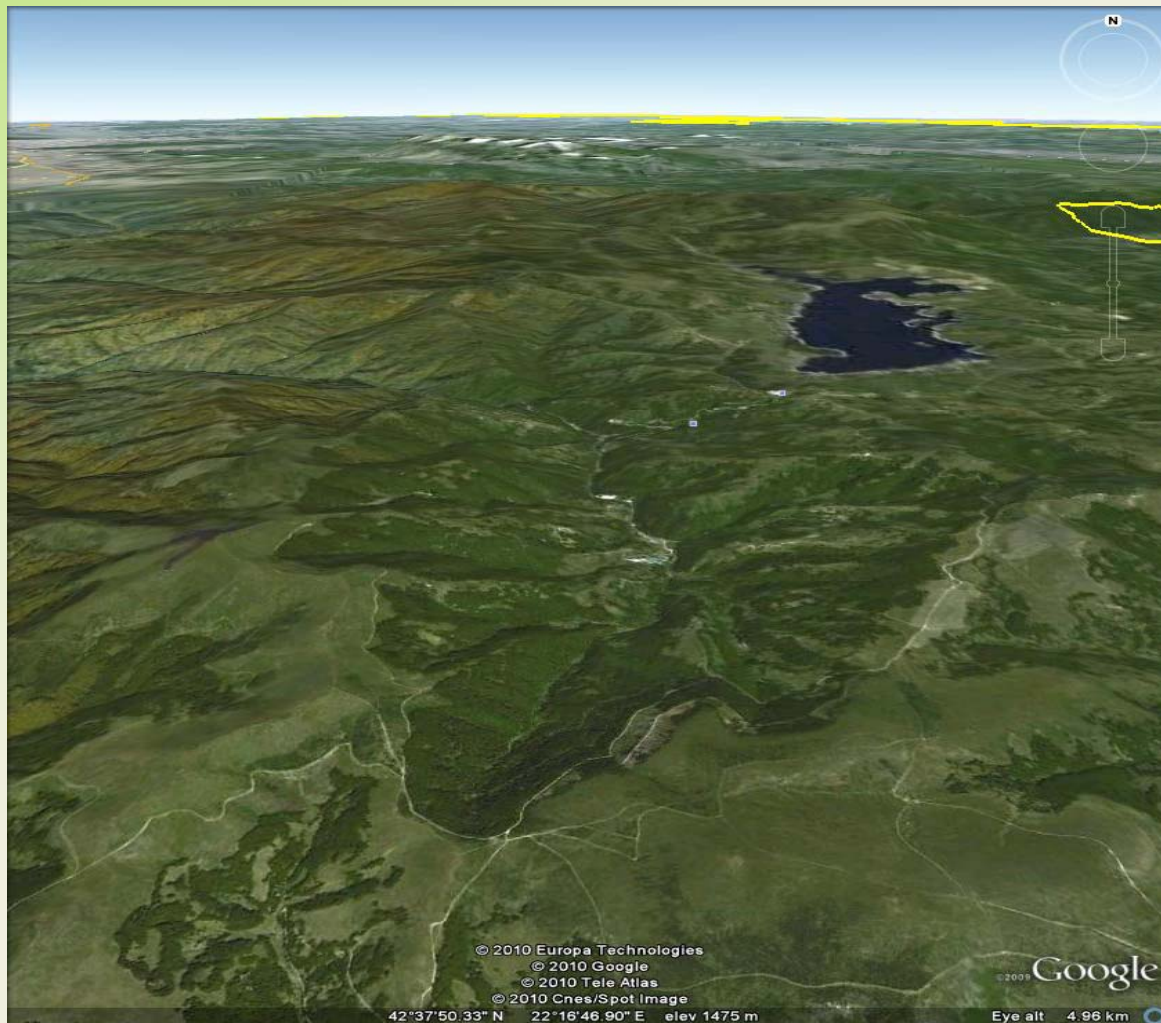
VILJE KOLO IN THE VLASINA REGION



The ridge Vilje Kolo
is directed East-West.

The prevailing wind directions
are NW, N and SW

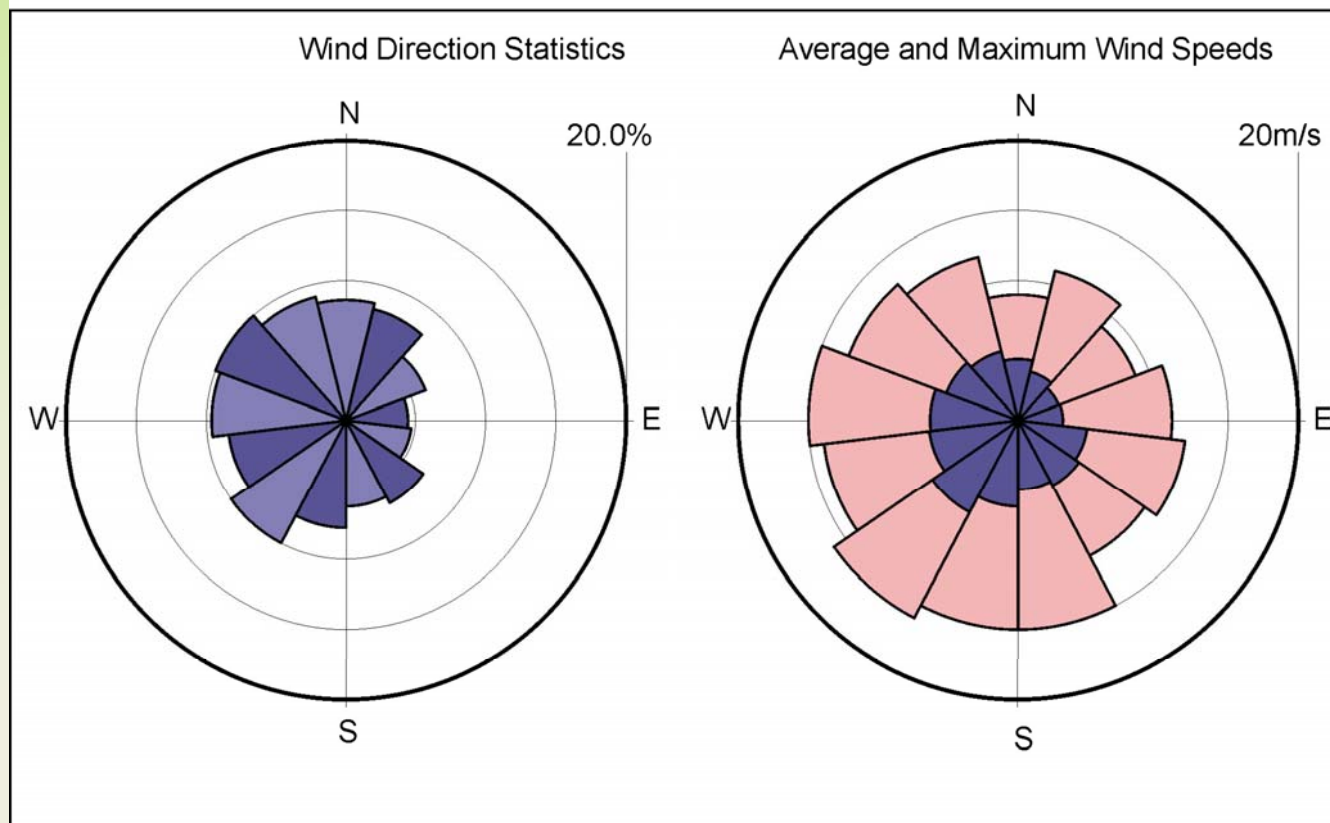
VILJE KOLO IN THE VLASINA REGION (satellite view)



Wind Roses on the Location Vilje Kolo, April 2009

Start Meas.: 01.04.09 00:00

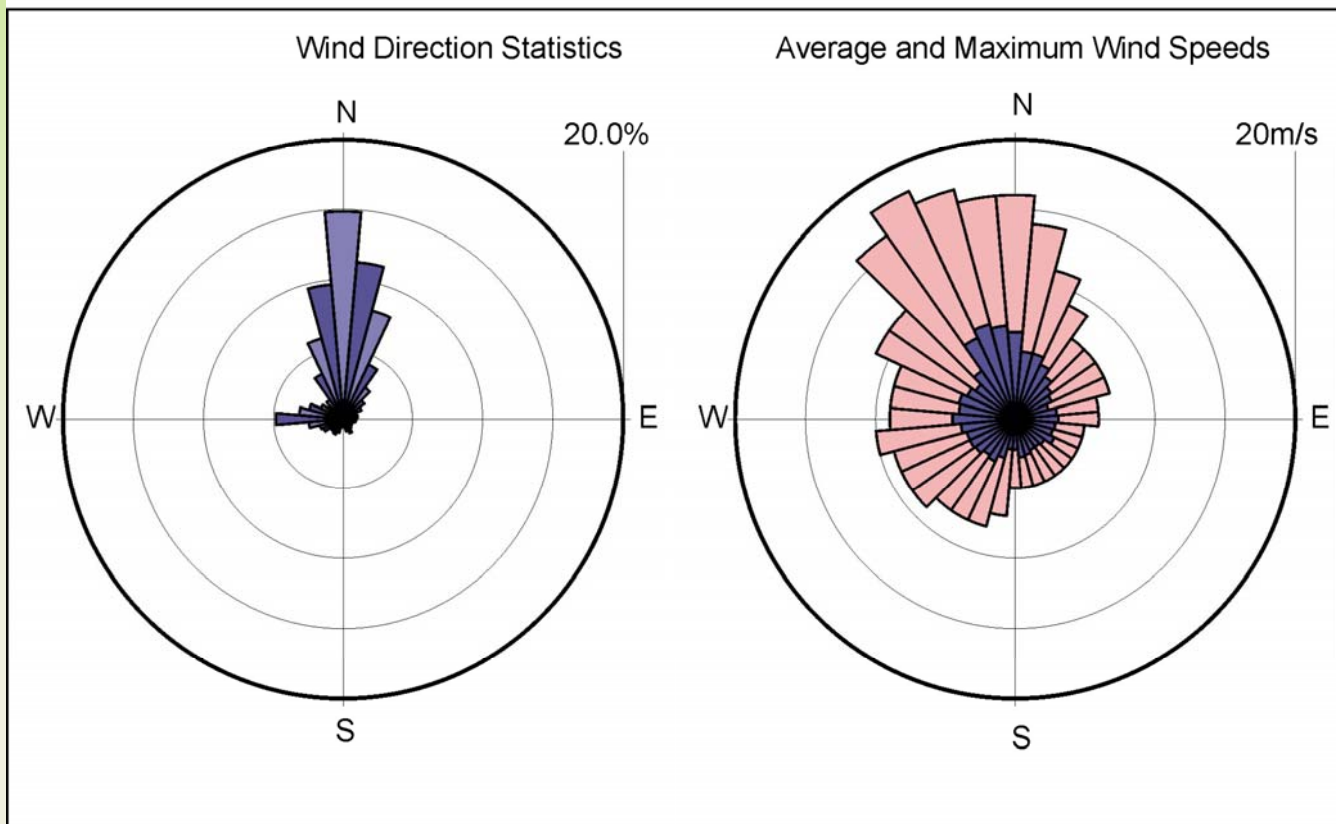
No. of Averages: 30 days (43200 à 1 min.)



Wind Roses on the Location Vilje Kolo, July 2009

Start Meas.: 01.07.09 00:00

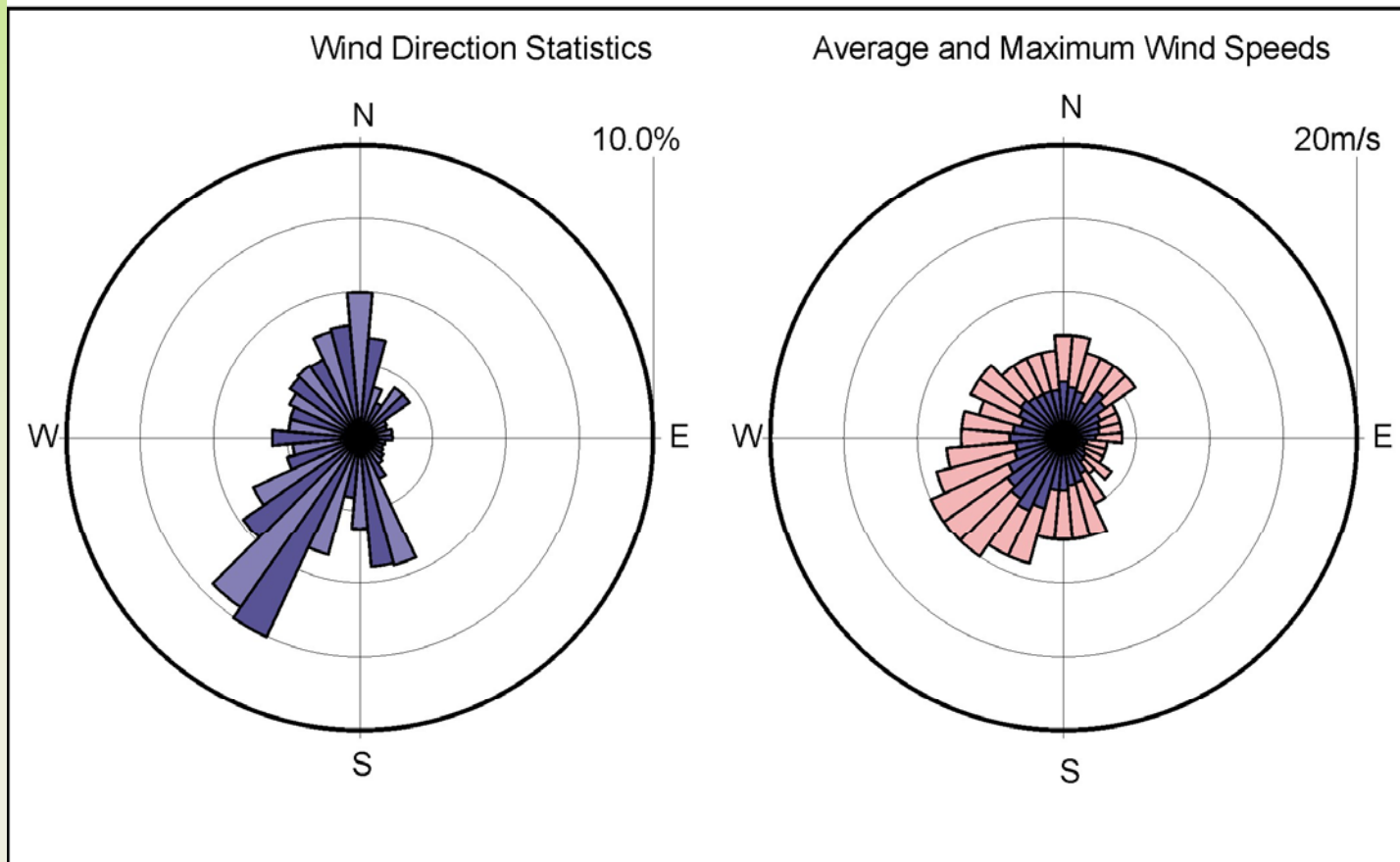
No. of Averages: 31 days (44640 à 1 min.)



Wind Roses on the Location Vilje Kolo, October 2009

Start Meas.: 01.10.09 00:00

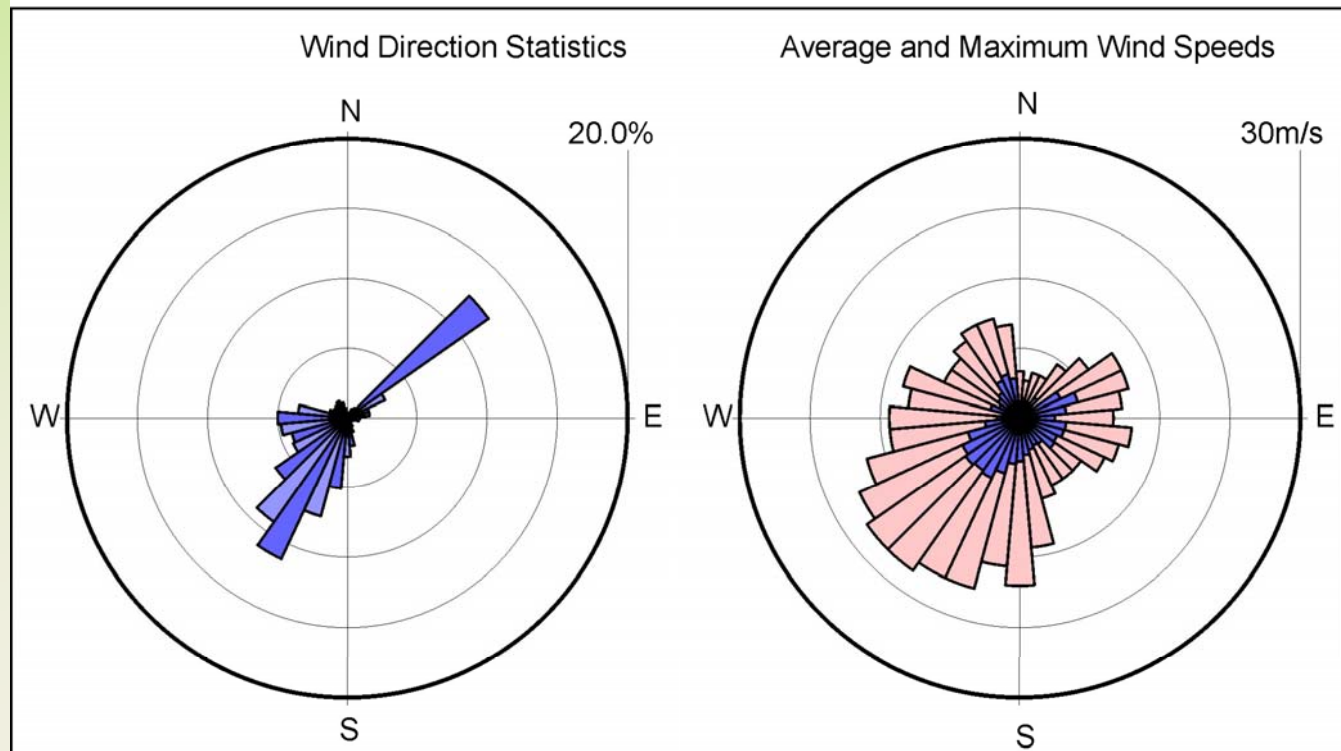
No. of Averages: 10 days (14459 à 1 min.)



Wind Roses on the Location Vilje Kolo, December 2009

Start Meas.: 01.12.09 00:00

No. of Averages: 31 days (44640 à 1 min.)



ICING ON THE VILJE KOLO, December 2008



ICING ON THE VILJE KOLO, December 2008



ICING AND STRONG WIND ON THE VILJE KOLO

January 2009





ICING AND STRONG WIND

ON THE VILJE KOLO

January 2009

SNOW, ICE AND...

VILJE KOLO, January 2009



... ROCKS ON THE ROAD
VILJE KOLO, OCTOBER 2008



POWER OUTAGE EVENTS IN VLASINA REGION (recorded over last 10 years by EMS)

- **In 2004**
 - **Local icing (Bosiljgrad township) 48h outage**
- **Since 2006**
 - **7 events (unrelated to ice)**
 - **Cumulative maximum outage time: 201 min**

Thank you