

EXPERIENCES IN MIGRATING WINDSIM CALCULATIONS TO CLOUD

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Statkraft Wind & Site Team

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The need



OLD SERVER

2 Windsim 9 Licenses on a
36 processor / ca. 650 MB RAM
1 active user

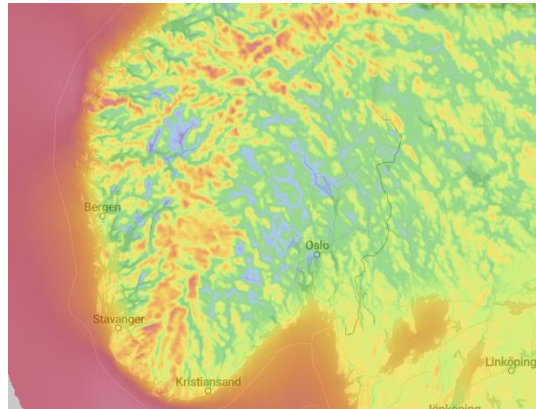


Team grew up to 4 people
Number of pipeline projects
exploded



Only 2 simultaneous
windfield runs
Ca. 3 days of calculation
Communication necessary
between us

The need - Approach



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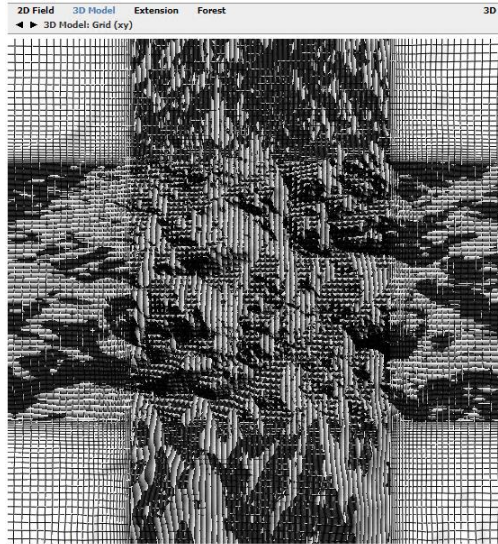
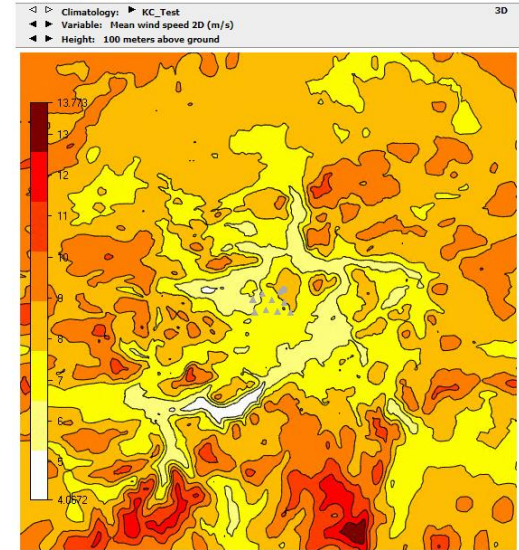


Fig 1. Digital terrain model - Grid (xy).

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Downscaled mesoscale data as input

Windsim Model

Wind Resources for AEP calculations

First steps



The first idea was to increase the number and capacity of the server

More RAM More CPU



windsim



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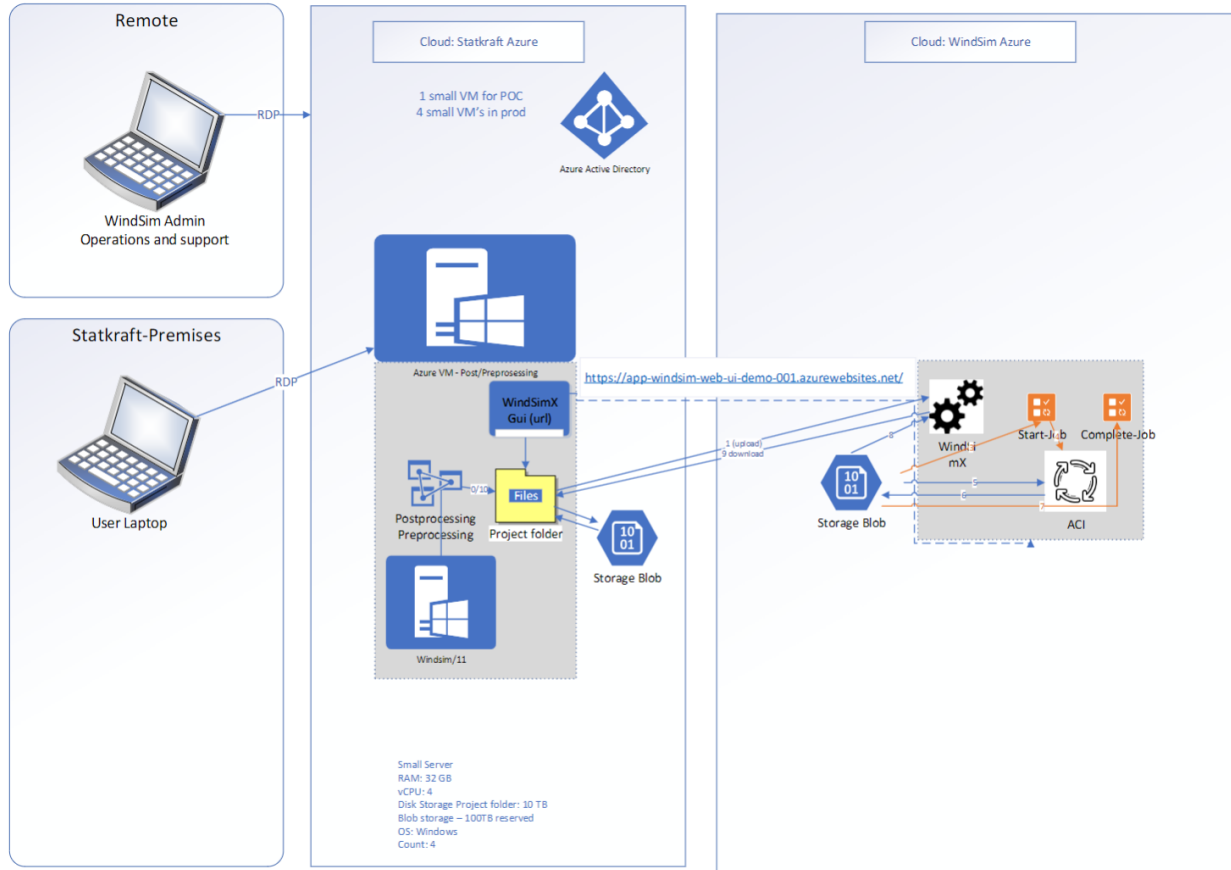
IT Process

IRAM 2 (Information Risk Assessment Methodology) Process



- ▶ As W&S Engineers this process was an alien for us
- ▶ Statkraft IT managed the process
- ▶ Information security was of paramount importance
- ▶ Met mast data and Project Information
- ▶ Not only for W&S tools but for every Statkraft tool in cloud














Current Setup



Getting used to Windsim X on cloud

+ New project

Search projects

Project	Project role	Visibility	Update date
 [TF]	Owner	Private	3 days ago
 [TF]	Owner	Private	3 days ago
 [TF]	Owner	Private	4 days ago
 [IM]	Owner	Private	6 days ago
 [TF]	Owner	Private	7 days ago
 [IM]	Owner	Private	8 days ago
 [TF]	Owner	Private	10 days ago
 [IM]	Owner	Private	11 days ago
 [TF]	Owner	Private	11 days ago
 [UL]	Owner	Private	12 days ago
 [UL]	Owner	Private	14 days ago
 [UL]	Owner	Private	14 days ago
 [UL]	Owner	Private	14 days ago



Getting used to Windsim X on cloud

Results

Start windfields job

Simulations

- Field value
- Spot values
- Residual values
- Residual values log

Jobs status

Refresh all sectors manually

Sector 0°
Completed Est. 0:00:00 Elapsed 11:12:46

Sector 22°
Completed Est. 28:10:48 Elapsed 11:49:12

Sector 45°
Completed Est. 0:00:00 Elapsed 12:37:36

Sector 57°
Completed Est. 0:00:00 Elapsed 11:07:57

Sector 90°
Completed Est. 0:00:00 Elapsed 10:22:28

Sector 112°
Completed Est. 0:00:00 Elapsed 12:33:36

Sector 135°
Completed Est. -18:0°:0" Elapsed -9:0°:0"

Sector 157°
Completed Est. 0:00:00 Elapsed 11:55:42

Sector 180°
Completed Est. 0:00:00 Elapsed 10:22:53

Sector 202°
Completed Est. 0:00:00 Elapsed 11:53:01

Sector 225°
Completed Est. 0:00:00 Elapsed 13:17:31

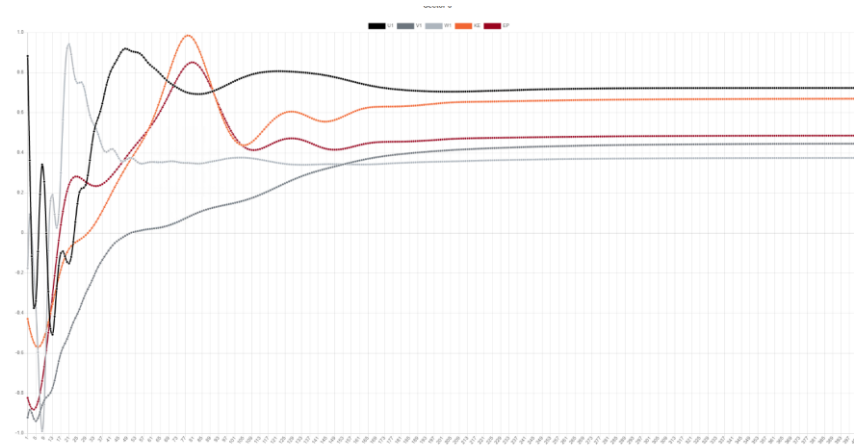


Table 1. Boundary and initial conditions for the wind field simulation.

Date	Time	Sector	Solver	Conver	Iter	Iter sec	Time sec	IO
15.06.21	21:19:29	0	GCV	No	1000	404	11:37:55	(C)
15.06.21	21:54:14	22	GCV	No	1000	421	12:13:44	(C)
15.06.21	22:47:27	45	GCV	No	1000	473	13:06:49	(C)
15.06.21	21:14:37	67	GCV	No	1000	411	11:34:08	(C)
15.06.21	20:29:13	90	GCV	No	1000	374	10:47:47	(C)
15.06.21	21:30:09	112	GCV	No	1000	408	13:07:30	(C)
16.06.21	00:24:54	135	GCV	No	1000	520	14:42:16	(C)
15.06.21	22:08:07	157	GCV	No	1000	427	12:19:29	(C)
15.06.21	20:35:40	180	GCV	No	1000	378	10:54:10	(C)
15.06.21	22:03:07	202	GCV	No	1000	430	12:21:29	(C)
15.06.21	23:37:26	225	GCV	No	1000	491	13:56:48	(C)
15.06.21	22:26:45	247	GCV	No	1000	444	12:45:12	(C)
15.06.21	21:28:38	270	GCV	No	1000	409	11:47:18	(C)
15.06.21	23:49:03	292	GCV	No	1000	496	14:05:28	(C)
16.06.21	01:36:53	315	GCV	No	1000	567	15:55:41	(C)
15.06.21	23:03:38	337	GCV	No	1000	473	13:23:00	(C)

THANK YOU, QUESTIONS?

For further info;

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