



Hovedredningssentralen

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15. april 2021

Spatiale analyser

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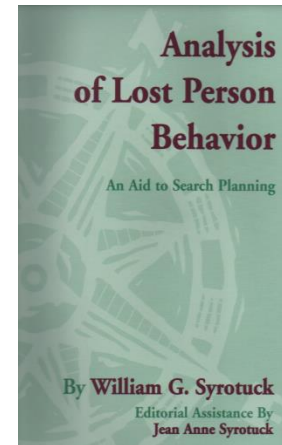
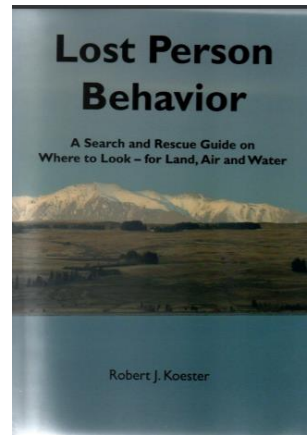


- *Spatial analysis or spatial statistics includes any of the formal techniques which studies entities using their topological, geometric, or geographic properties*

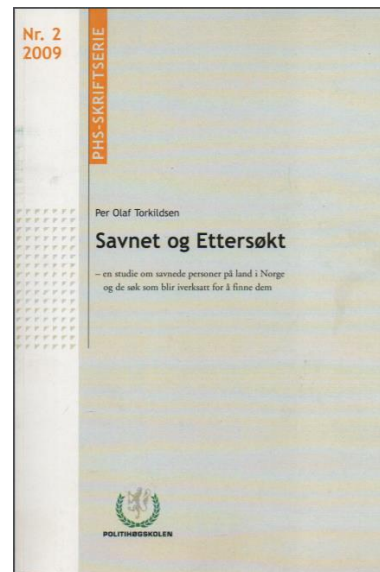


Map by Dr. John Snow of London, showing clusters of cholera cases in the 1854 Broad Street cholera outbreak. This was one of the first uses of map-based spatial analysis.

[Link til video om analysene til John Snow](#)



← Teoretisk grunnlag



← Min analyse

Min Master Thesis finner du [her](#)

Skier-Nordic

(125)

Nordic or cross-country skiers include both recreational and those using skis as a method of transportation. It does not include alpine skiers or those with snowshoes who are each placed in their own separate categories.

Skiers are well-dressed for immediate weather and often carry some equipment including some food and water. However, there are no long waits in lift lines, so Nordic skiers are dressed for rigorous exercise. They may have some survival equipment and 60% have some survival training.⁵⁵ Most are in good physical shape and have some experience. Being lost accounts for almost all of the incidents (90%). Almost half (46%) will self-rescue. When they are lost, it is because of taking wrong turns and missing trails. Weather, white-out or blizzard conditions, and darkness are major contributors to mistakes at decision points. Many skiers are found at a trailhead or on a trail, but they may also be found back at the lodge, a bar, or home; thus, an investigative scenario is important. Being overdue (5%) is typically caused by misjudging time, snow conditions, weather conditions, equipment problems, and miscommunication. When lost or overdue, skiers either keep moving to stay warm, build snow shelters or break into structures. Mitchell found that 30-45% moved at night.⁵⁵ When natural light (moon) or other light is available, the subject is much more likely to move at night.

Avalanches may be an important factor (2%). Skiers (no differentiation between alpine and Nordic for this statistic) account for 24% of avalanche fatalities in the US. Backcountry skiers accounted for 16%, out-of bounds-skiers 8%, and skiing in-bounds (1%).⁶⁷ Trauma does not appear to be a major issue for Nordic skiers. If the subject was skiing across frozen lakes or ponds, consider a broken ice scenario.

Skier-Nordic

Distance (horizontal) from the IPP (miles)		
	Temperate	Dry
	Mtn	Mtn
n	29	41
25%	1.0	1.2
50%	2.2	2.7
75%	4.0	4.0
95%	12.2	12.1

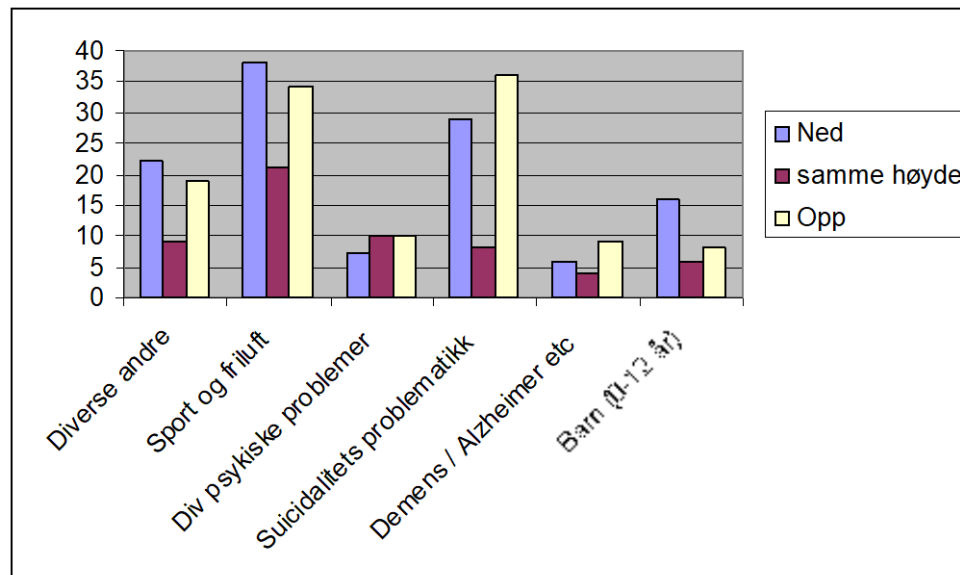
Distance (horizontal) from the IPP (kilometers)		
	Temperate	Dry
	Mtn	Mtn
n	29	41
25%	1.6	1.9
50%	3.5	4.3
75%	6.4	6.4
95%	19.6	19.5

Elevation (vertical) Change from the IPP (feet)					
Temperate			Dry		
Uphill	Down	Same	Uphill	Down	Same
				100%	

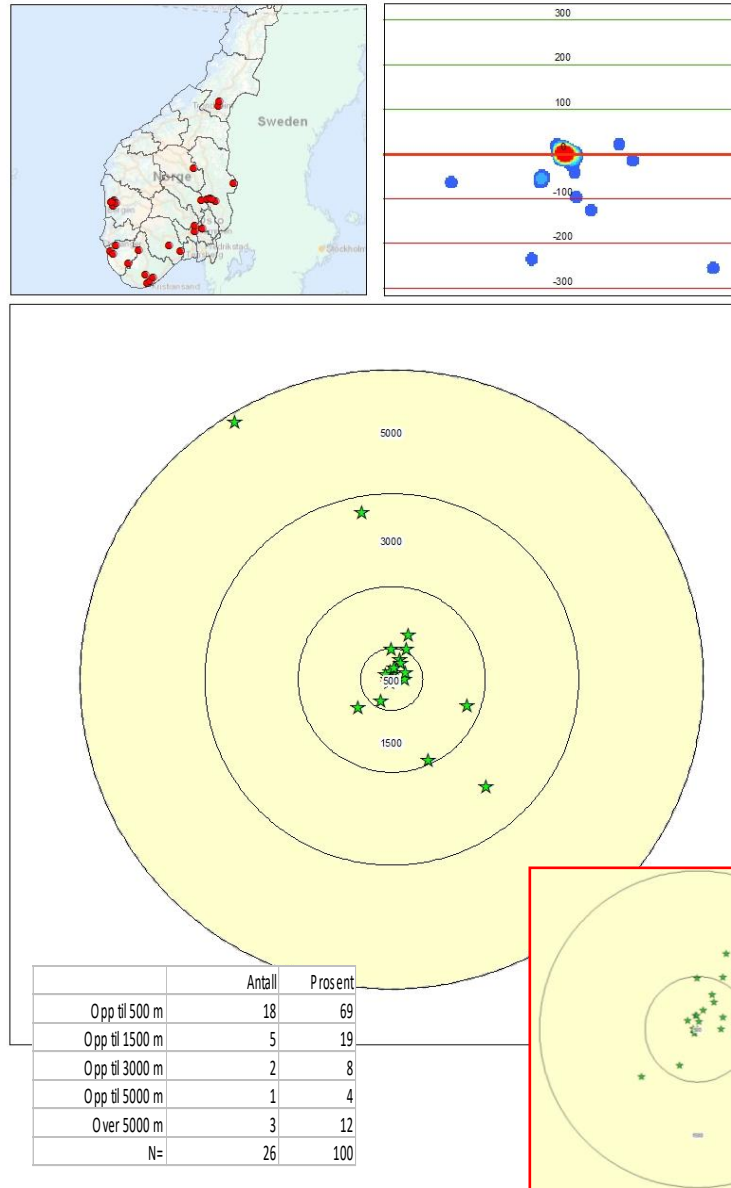
Mobility (hours)	
Temperate	Dry
	8
	6

Dispersion Angle (degrees)	
Temperate	Dry
n	22
25%	16
50%	48
75%	149
95%	165

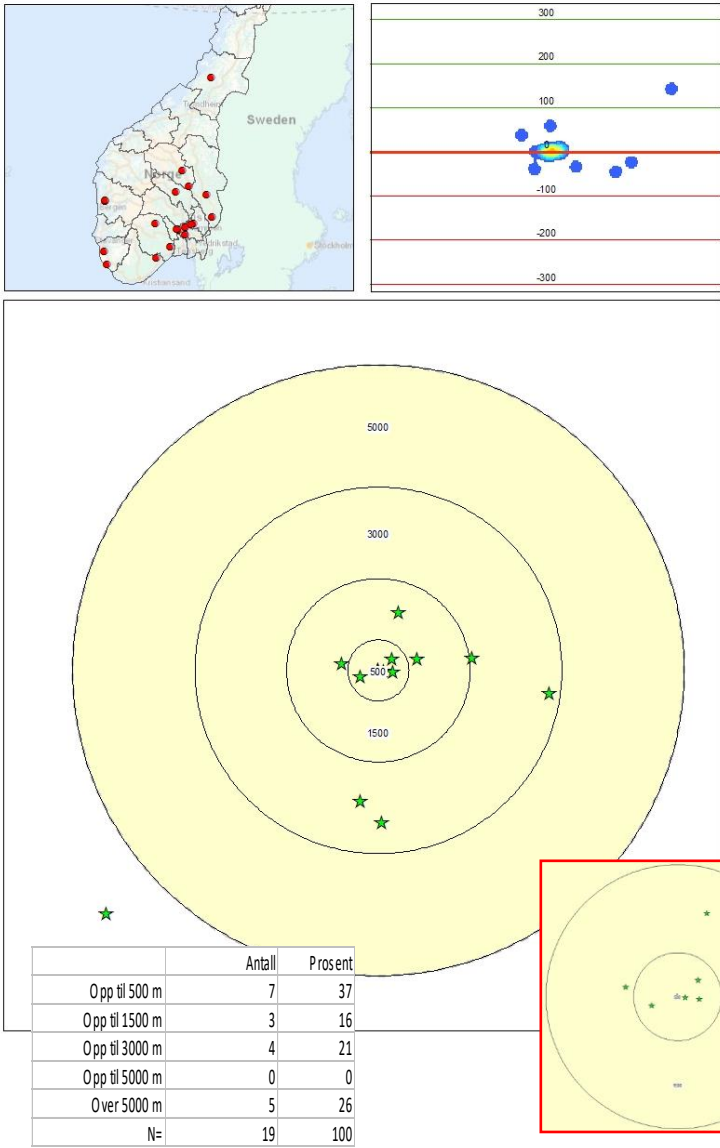
Vertikal forflytning



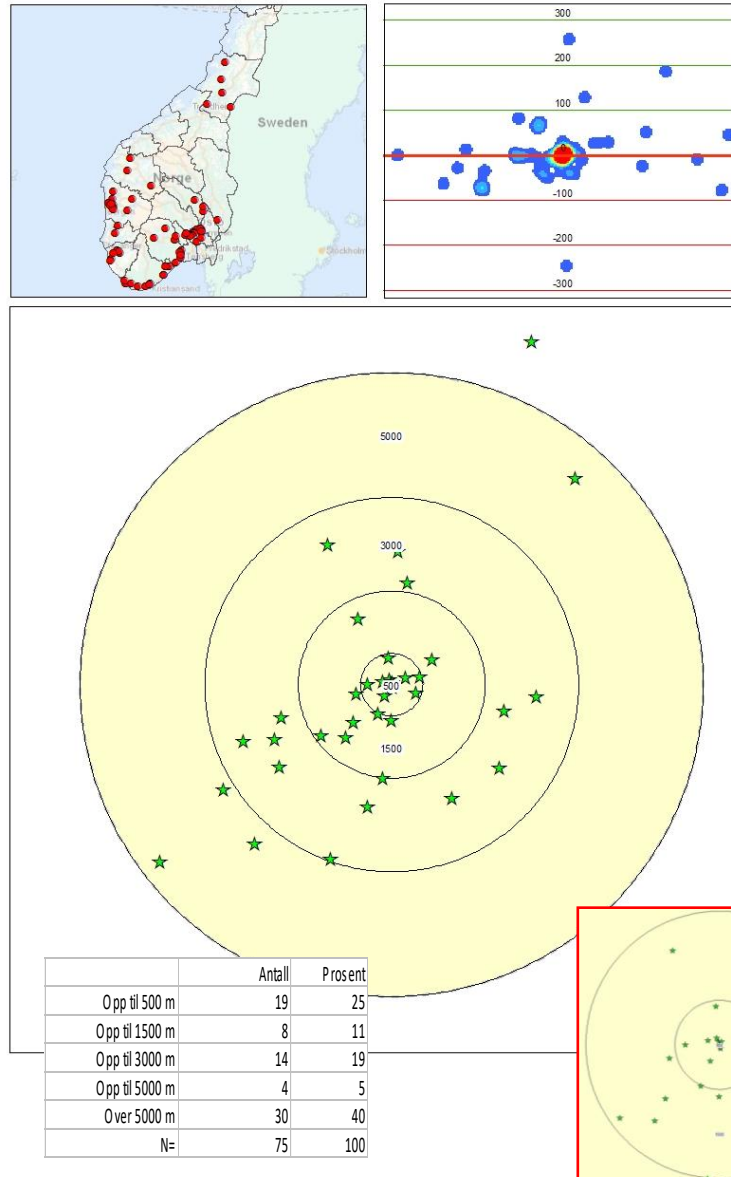
BARN



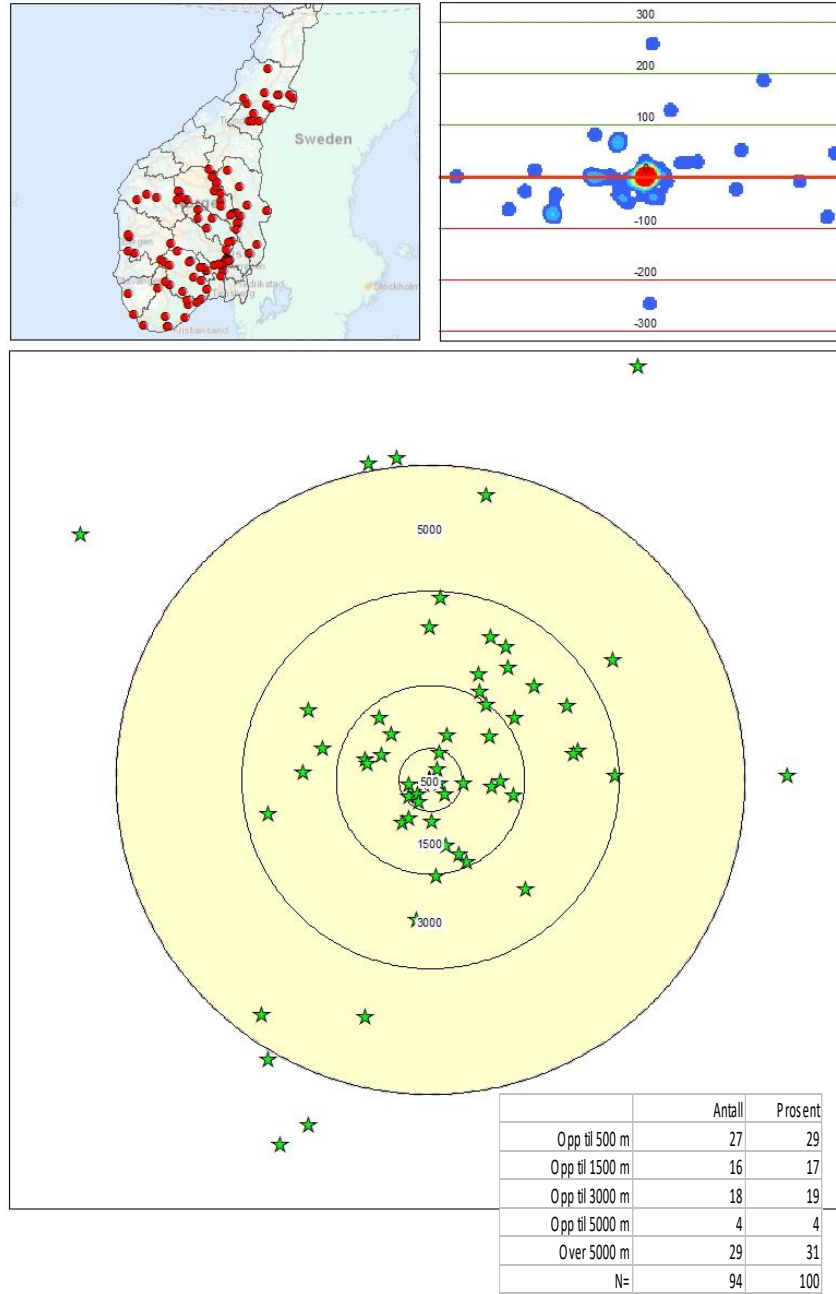
DEMENTE/ALZHEIMER



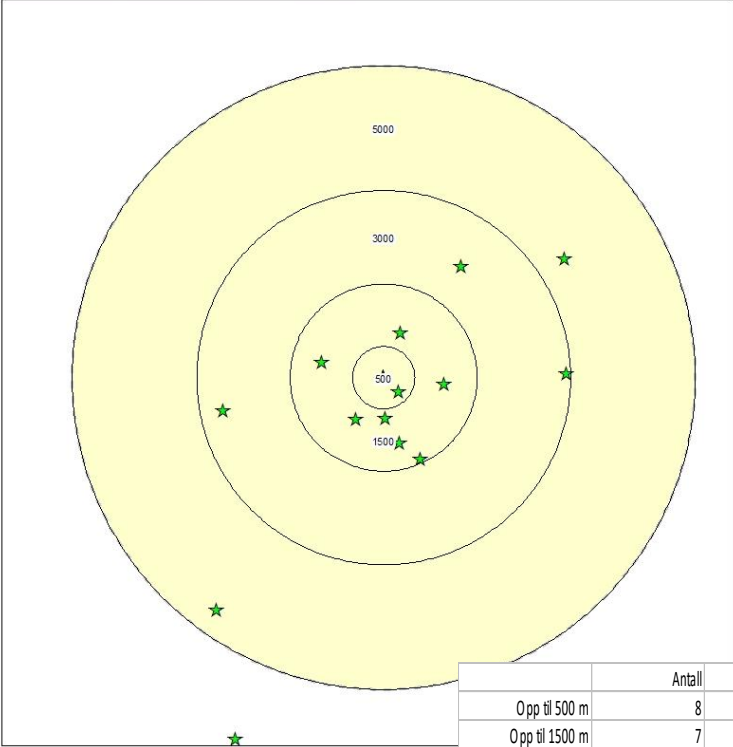
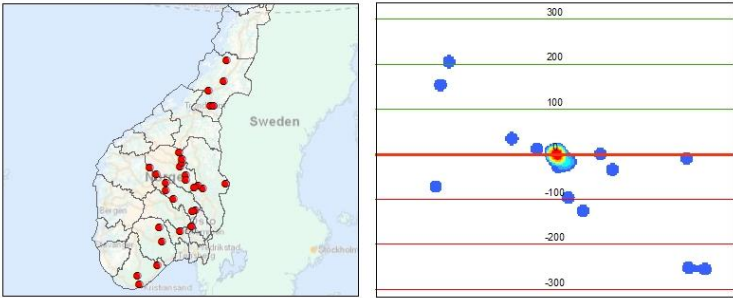
SUICIDALE



SPORT OG FRILUFT



SKIGÅERE



	Antall	Prosent
Opp til 500 m	8	40
Opp til 1500 m	7	35
Opp til 3000 m	3	15
Opp til 5000 m	2	10
Over 5000 m	11	55
N=	20	100



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Kvikkleirskredet i Gjerdrum

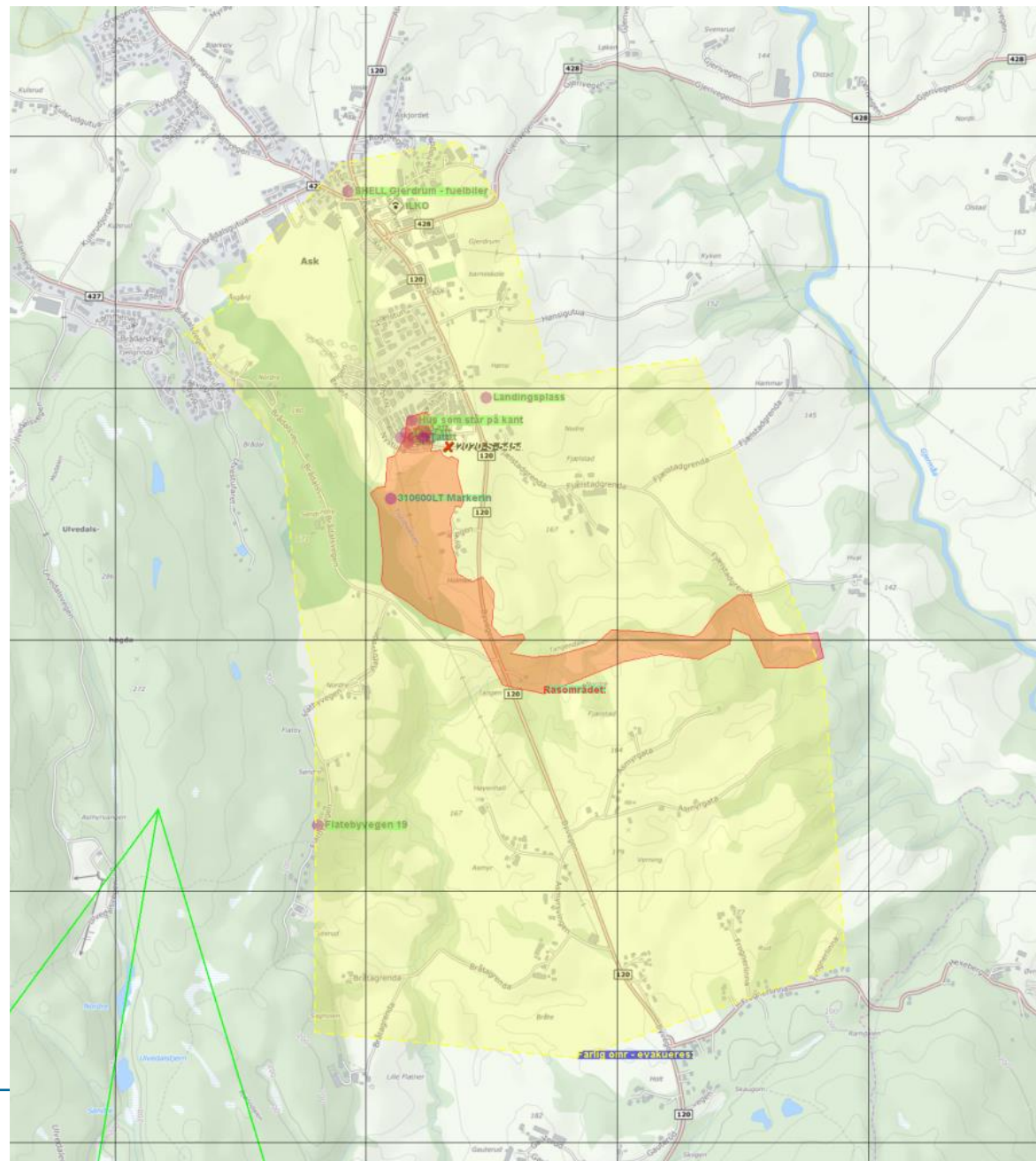


30. Desember kl. 0356

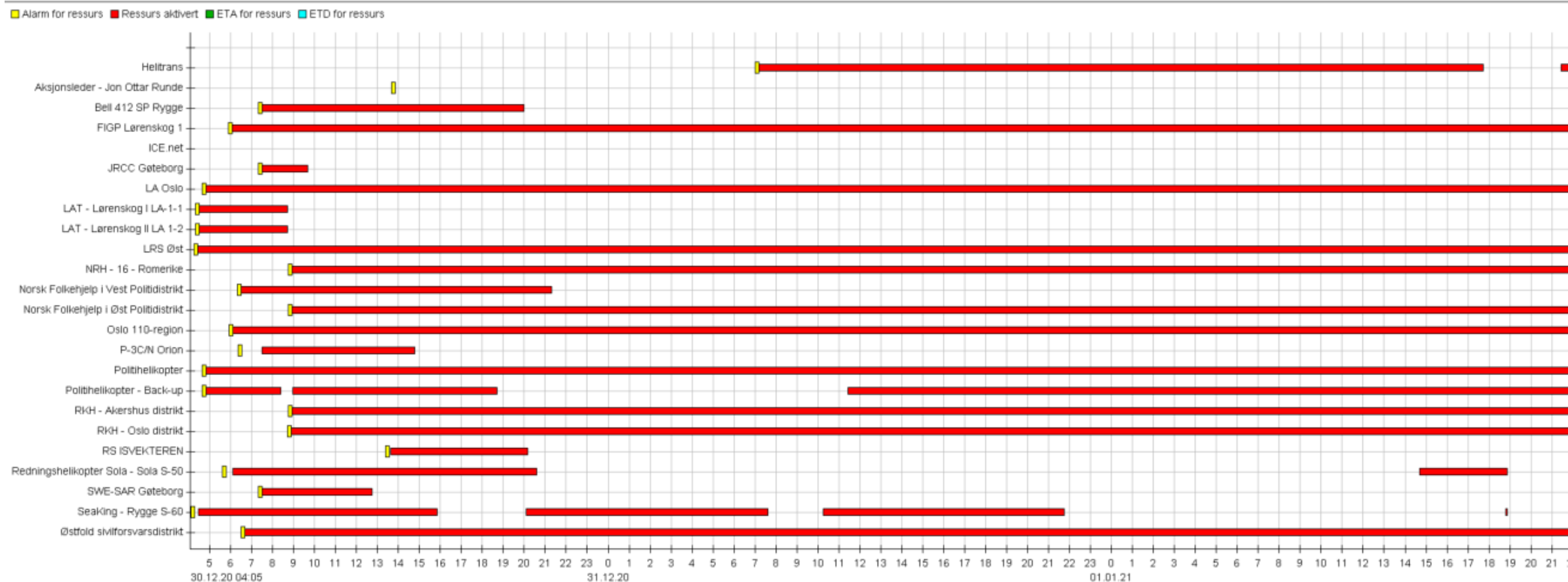
27 hus tatt av skred
15 mennesker reddet
av helikopter
10 mennesker funnet
omkommet

ASK, Gjerdrum kommune

42 km nord for Oslo sentrum
21 km sør for Oslo lufthavn
(Gardermoen)

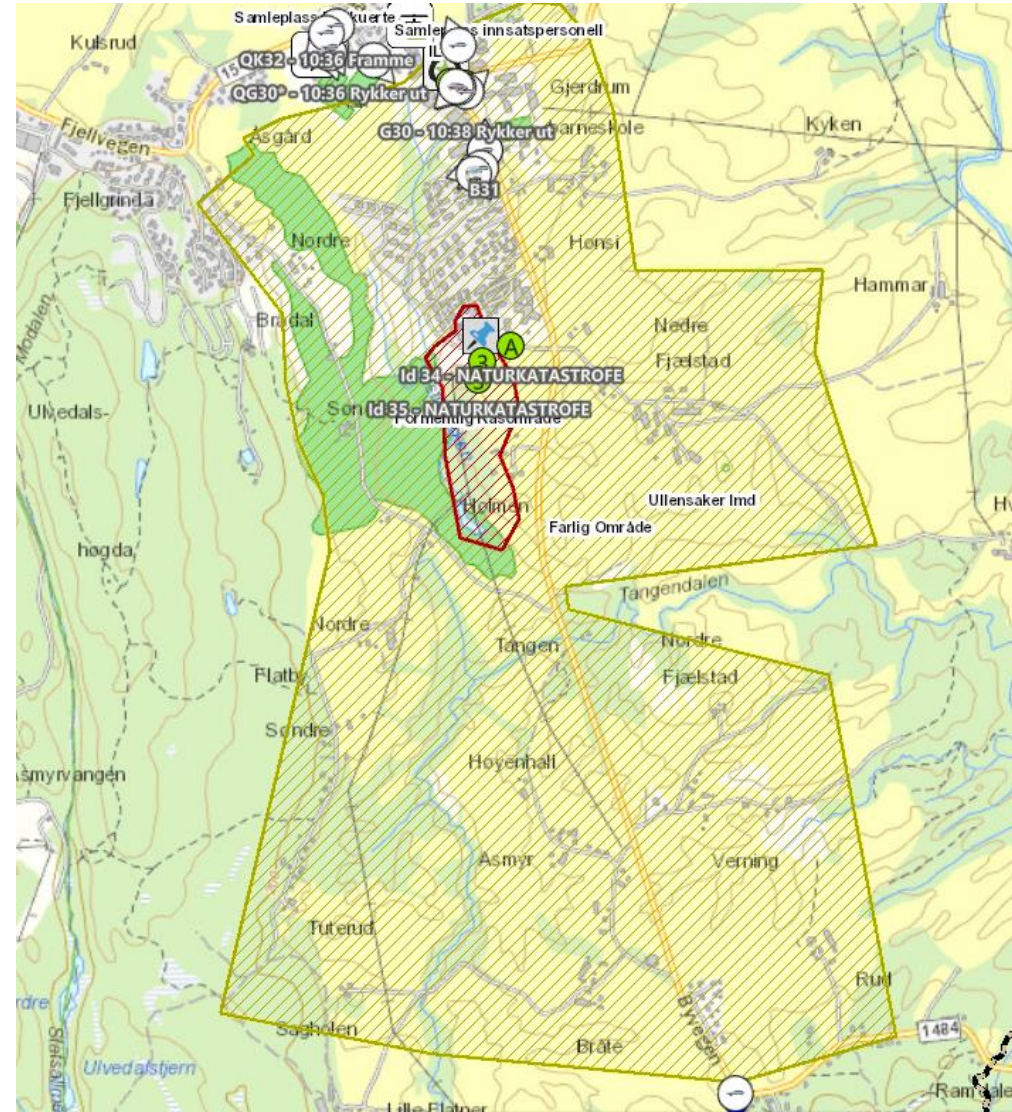


Kvikkleireskredet i Gjerdrum - Ressurser



Kvikkleireskredet i Gjerdrum

- Første oversikt over fareområde/evakueringsområde kl. 1046
 - Ble etter hvert utvidet
- Mye søppel som flyr i lufta – luftressursene må gå høyere i søk
- Meget stor droneoperasjon. God nytte av droner med kamera/IR-kamera for oversikt og søk. Både kostnadseffektivt og et bra supplement til helikoptre





Matter ble lagd på leiren for å kunne
Gå trygt i rasområdet

Helikopter med lys og kamera





USAR trening med hund

USAR trening med paramedic

FØR SKREDET



ETTER SKREDET



Kvikkleireskredet i Gjerdrum

- Oppsummering:
 - Godt samarbeid mellom mange forskjellige aktører
 - Samvirket i redningstjenesten fungerte meget godt
 - Mange gode læringspunkter å ta med seg videre til neste hendelse

- Vi deler evalueringsrapporten med dere når den foreligger.

