GRF in Norway

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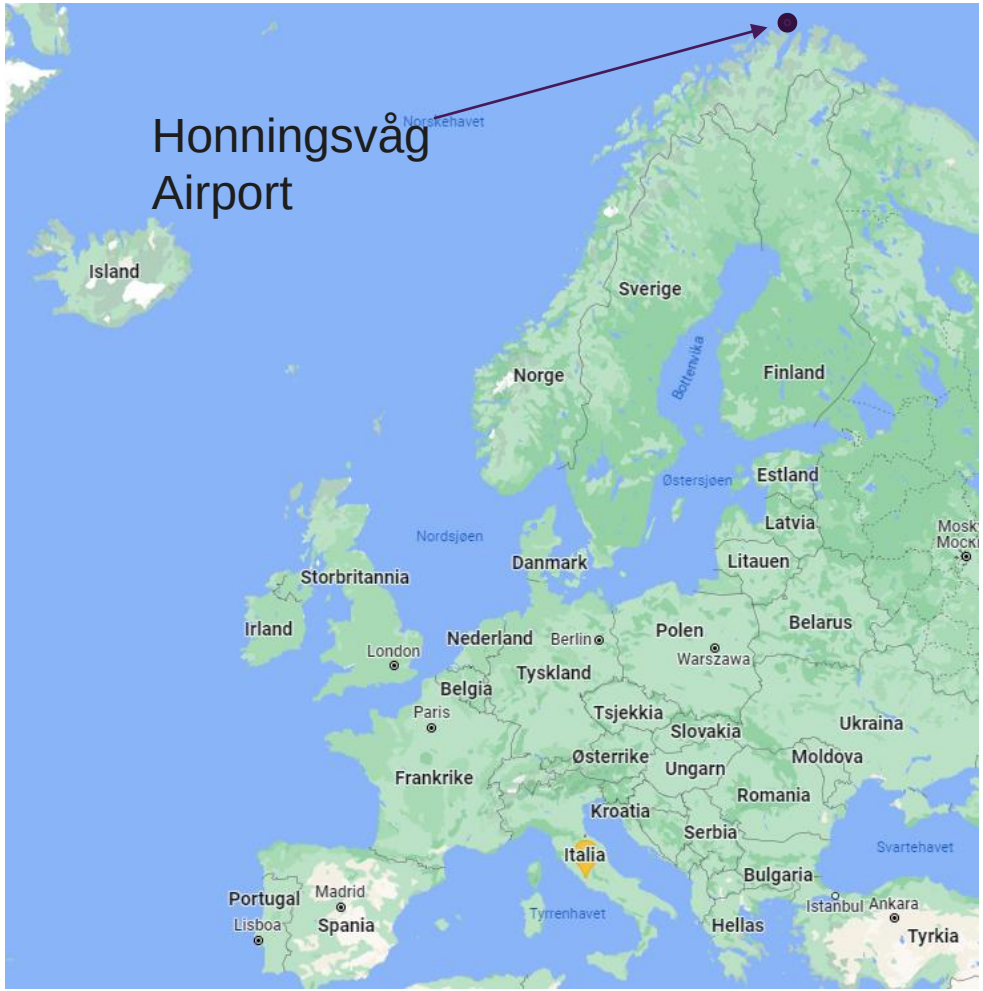
The Airport is located close to North cape. A landmark for travelers for houndreds of years.

This airport is one of 18 airports in Norway that use SPWR.

Half of all landings in the winterseason are on contaminated RWY, and 50% of these on SPWR



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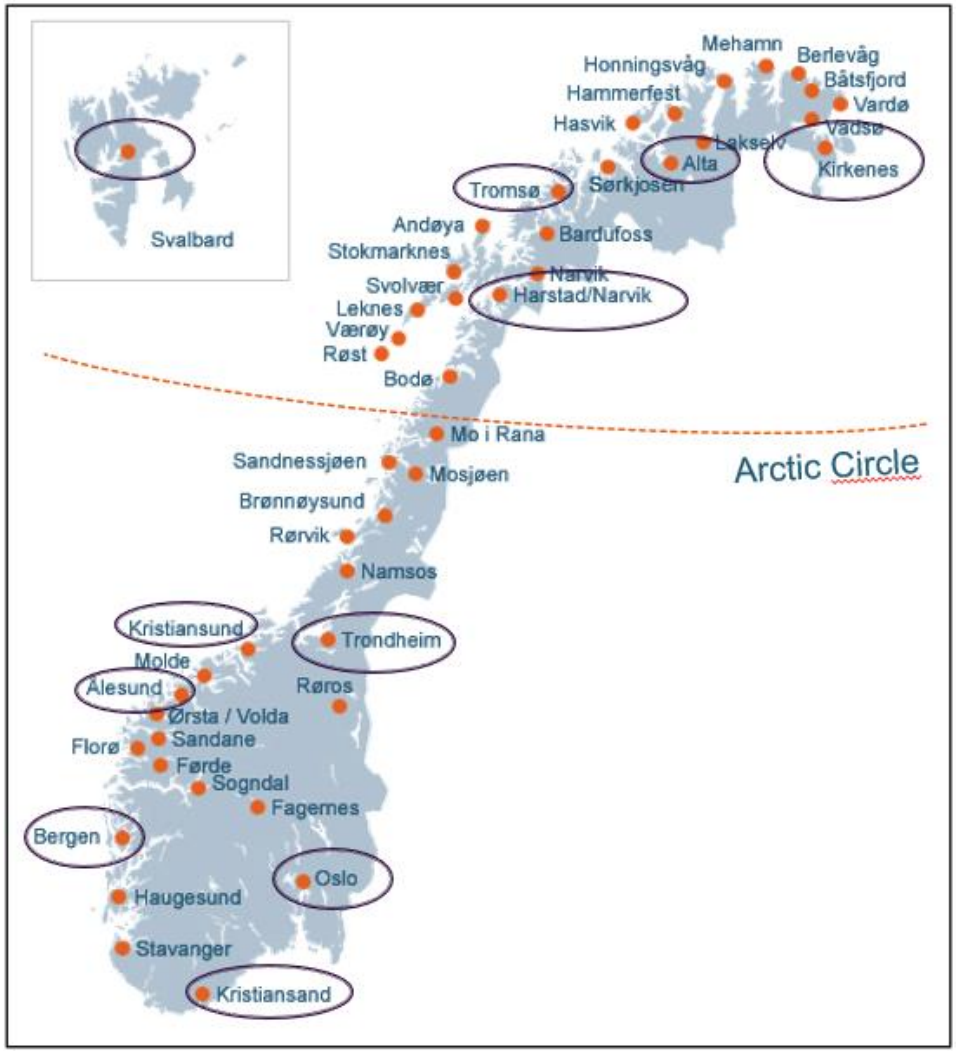
23 of Avinors airports are north of the arctic circle



Winter operations

- Implementation of GRF
  - Avinor got the first signal on this in 2015 from ICAO
  - Stateletter from ICAO came in April 2016
  - In 2016 Avinor, CAA and other stakeholders start to meet GRF recommendation.
    - CAA, Avinor, SAS,Norwegian and Widerøes starts a proses to join The rule making task (RMT) for European implementation of GRF
    - Norway got 4 out of 10 participants in the RMT
      - 2 from CAA (mr Norheim and mr Lande)
      - 1 from European Regions Airline Association (ERA) (Mr Støre from Widerøes)
      - 1 from Airports council international Europe (ACI) (Mr Hallquist from Avinor)
  - In 2017 CAA sat up a task force to meet the regulation from EASA
  - GRF starts 12 august 2021
    - All systems up and running. Training of the plow crews almost completed.
    - Reports on WET conditions start.
    - Agreement with Navblue and Widerøe to receive flight data.
    - Specially program for airports qualifying for SPWR.
    - Only 2 airports match the approval to SPWR this first season, due to lack of flightdata.
    - Winterseason 22/23 we still struggle to get enough flightdata to qualify the remaining 16 airports.

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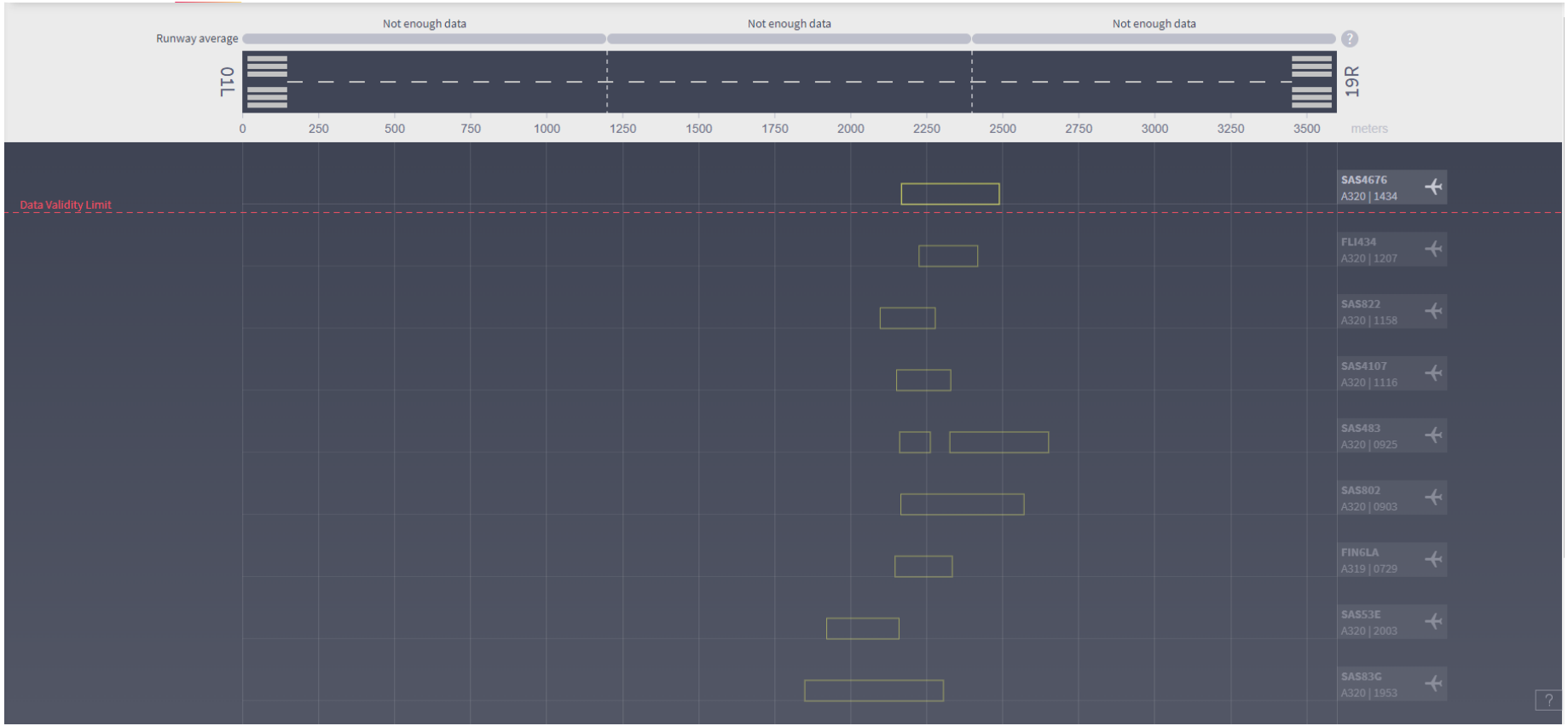
Navblue



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Winter operations

RCR compared with Flight data

Landingstidspunkt (UTC)	Lufthavn	Baneseksjon	RWYCC RCR	RWYCC Flydata	aircraftRegistration	Kontamineringstype	runway
22.02.2023 12:52:49	ENAL	B	5	5	SE-ROT	WET	24
22.02.2023 12:50:59	ENAT	B	5	5	SE-ROS	ICE	11
22.02.2023 12:27:18	ENTC	B	5	5	SE-ROP	WET	36
22.02.2023 12:07:26	ENGM	B	5	5	OY-RCL	SLUSH	19R
22.02.2023 12:07:26	ENGM	C	5	5	OY-RCL	SLUSH	19R
22.02.2023 11:58:21	ENGM	B	5	5	LN-RGL	SLUSH	19R
22.02.2023 11:16:56	ENGM	B	5	5	SE-ROY	SLUSH	19R
22.02.2023 10:16:37	ENKR	B	4	4	SE-ROU	SPECIALLY PREPARED WINTER RUNWAY	05
22.02.2023 09:27:13	ENEV	B	6	6	SE-ROL	DRY	35
22.02.2023 09:25:54	ENGM	B	4	4	SE-RUA	DRY SNOW	19R
22.02.2023 09:25:54	ENGM	C	4	4	SE-RUA	DRY SNOW	19R
22.02.2023 09:07:50	ENTC	A	5	5	SE-ROB	WET	36
22.02.2023 09:07:50	ENTC	B	5	5	SE-ROB	WET	36
22.02.2023 09:03:59	ENGM	B	4	4	EI-SIP	DRY SNOW	19R
22.02.2023 09:03:59	ENGM	C	4	4	EI-SIP	DRY SNOW	19R
22.02.2023 07:29:53	ENGM	B	4	4	OH-LVD	DRY SNOW	19R
21.02.2023 20:03:23	ENGM	B	6	6	SE-ROJ	DRY	19R
21.02.2023 19:53:23	ENGM	B	6	6	SE-RUE	DRY	19R
21.02.2023 19:36:46	ENGM	B	6	6	SE-ROP	DRY	19R
21.02.2023 19:22:47	ENGM	B	6	6	LN-RGM	DRY	19L
21.02.2023 19:21:40	ENBO	A	5	5	SE-RUF	COMPACTED SNOW	07
21.02.2023 19:21:40	ENBO	B	5	5	SE-RUF	COMPACTED SNOW	07
21.02.2023 19:03:44	ENGM	B	6	6	OY-VKC	DRY	19L
21.02.2023 18:50:43	ENGM	B	6	6	SE-RUD	DRY	19R
21.02.2023 18:23:59	ENGM	B	6	6	SE-ROZ	DRY	19R
21.02.2023 18:22:35	ENGM	B	6	6	SE-ROS	DRY	19L
21.02.2023 18:14:16	ENRM	B	6	6	LN-WID	COMPACTED SNOW	4
21.02.2023 17:46:02	ENBL	B	5	5	LN-WIF	WET	25
21.02.2023 17:40:33	ENGM	B	6	6	EI-SIP	DRY	19L
21.02.2023 17:40:33	ENGM	C	6	6	EI-SIP	DRY	19L
21.02.2023 17:01:31	ENVA	B	5	5	SE-ROS	DRY	09

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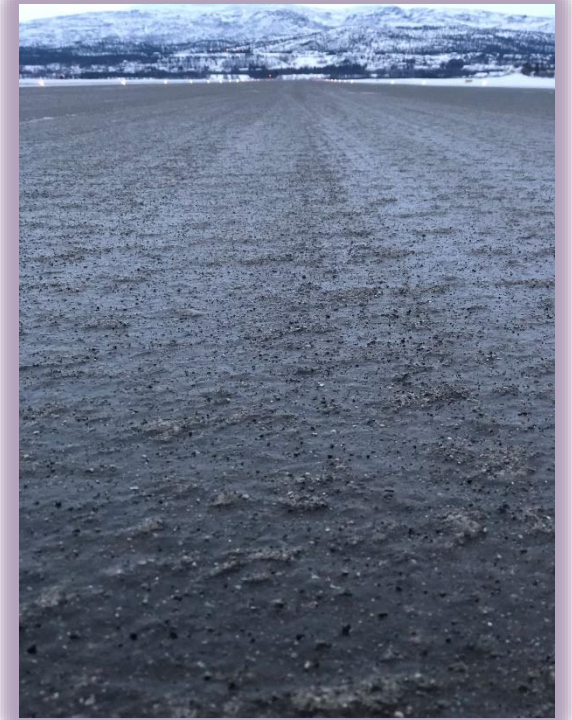
Winter maintenance and track reporting

- Specially Prepared Winter Runway (SPWR)
  - means a runway with a dry frozen surface of compacted snow or ice, or both, which has been treated with sand or grit or has been mechanically treated to improve runway friction.
  - Prior approval from CAA
  - Aeroplane data related to stopping performance
  - Statistical level of confidence for the number of landings when the reported RWYCC was deemed the same as or better than the experienced RWYCC.
  - level of confidence at least 95%



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Winter operations

- In most parts of Norway, winter this is business as usual
- Some airports have winter operations for 5 to 7 months
- This winter there have been 139151 landings
  - 26206 on contaminated RWY
  - 19% of all landings are on contaminated RWY (RWYCC 1-4)
  - 2643 landings are SPWR
  - We receives Flightdata from Navblue and Widerøe
    - ENGM 19%
    - ENTC 44%
    - ENAT 59%
    - ENKR 60%
    - ENSB 57%

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Winter operations

- Airport operations
  - Inspections are carried out when it is necessary.
    - At least 2 times å day
  - Triggers for extra inspections
    - Air traffic
    - Chance in:
      - Air Temperatur
      - Dew point
      - Surface temperatures
      - Wind speed or directions
      - Rain, Snow, frost, drifting snow
      - Preparation on RWY (Sand, chemicals, sweeping etc)
      - Sunrise or sunset
      - Airplane data
    - Pilots repots

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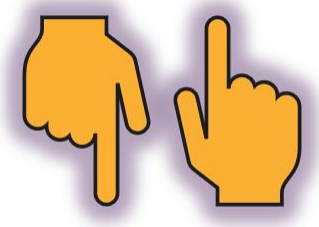
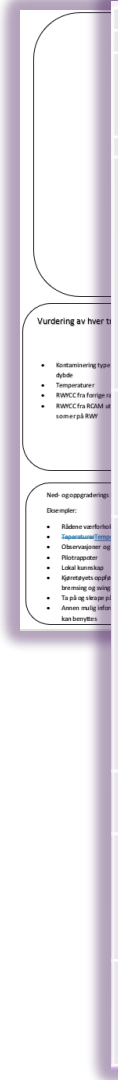
Winter operations

Developing contaminant and RWYCC

- Downgrade or upgrade criteria
  - Precipitation
  - Air Temperature
  - Dew point
  - Surface temperatures
  - Wind speed or directions
  - Local knowledge on weather
  - IRIS
  - Measuring of contaminant depth
  - Vehicle behavior
  - Shoe scraping
  - Sand or chemicals
  - Airplane reports
  - Pilot reports
  - Friction measurements device





Runway condition assessment matrix (RCAM)

Assessment criteria		Downgrade assessment criteria	
RWYCC	Runway surface description	Aeroplane deceleration or directional control observation	Pilot report of runway braking action
6	DRY	-	-
5	• FROST • WET (The runway surface is covered by any visible dampness or water up to and including 3 mm depth) Up to and including 3 mm depth: SLUSH DRY SNOW WET SNOW	Braking deceleration is normal for the wheel braking effort AND directional control is normal	GOOD
4	SPECIALLY PREPARED WINTER RUNWAY -15C and lower outside temperature COMPACTED SNOW	Braking deceleration OR directional control is between good and medium	GOOD TO MEDIUM
3	SLIPPERY WET DRY SNOW or WET SNOW (any depth) ON TOP OF COMPACTED SNOW More than 3 mm depth: DRY SNOW WET SNOW Higher than -15oC outside air temperature: COMPACTED SNOW	Braking deceleration is noticeably reduced for the wheel braking effort applied OR directional control is noticeably reduced	MEDIUM
2	More than 3 mm: STANDING WATER SLUSH	Braking deceleration OR directional control is between medium and poor	MEDIUM TO POOR
1	ICE	Braking deceleration is significantly reduced for the wheel braking effort applied OR directional control is significantly reduced	POOR
0	• WET ICE • WATER ON TOP OF COMPACTED SNOW • DRY SNOW or WET SNOW ON TOP OF ICE	Braking deceleration is minimal to non-existent for the wheel braking effort applied OR directional control is uncertain	LESS THAN POOR

Winter operations

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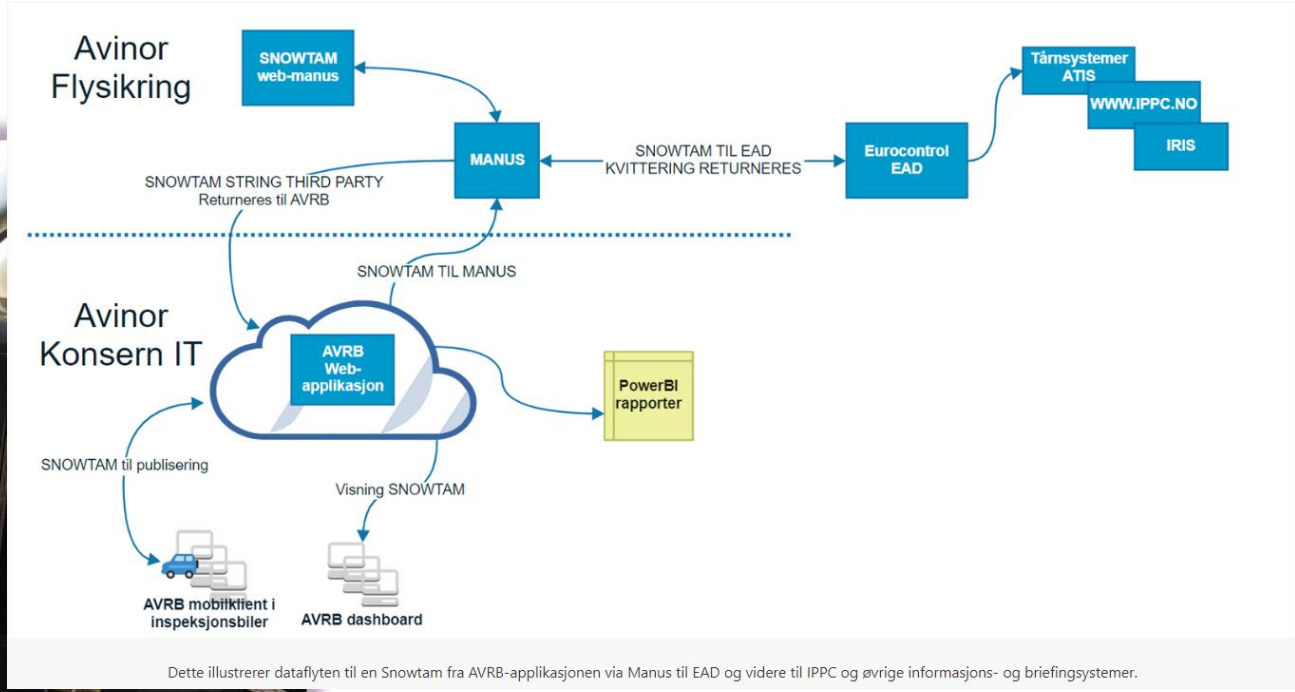
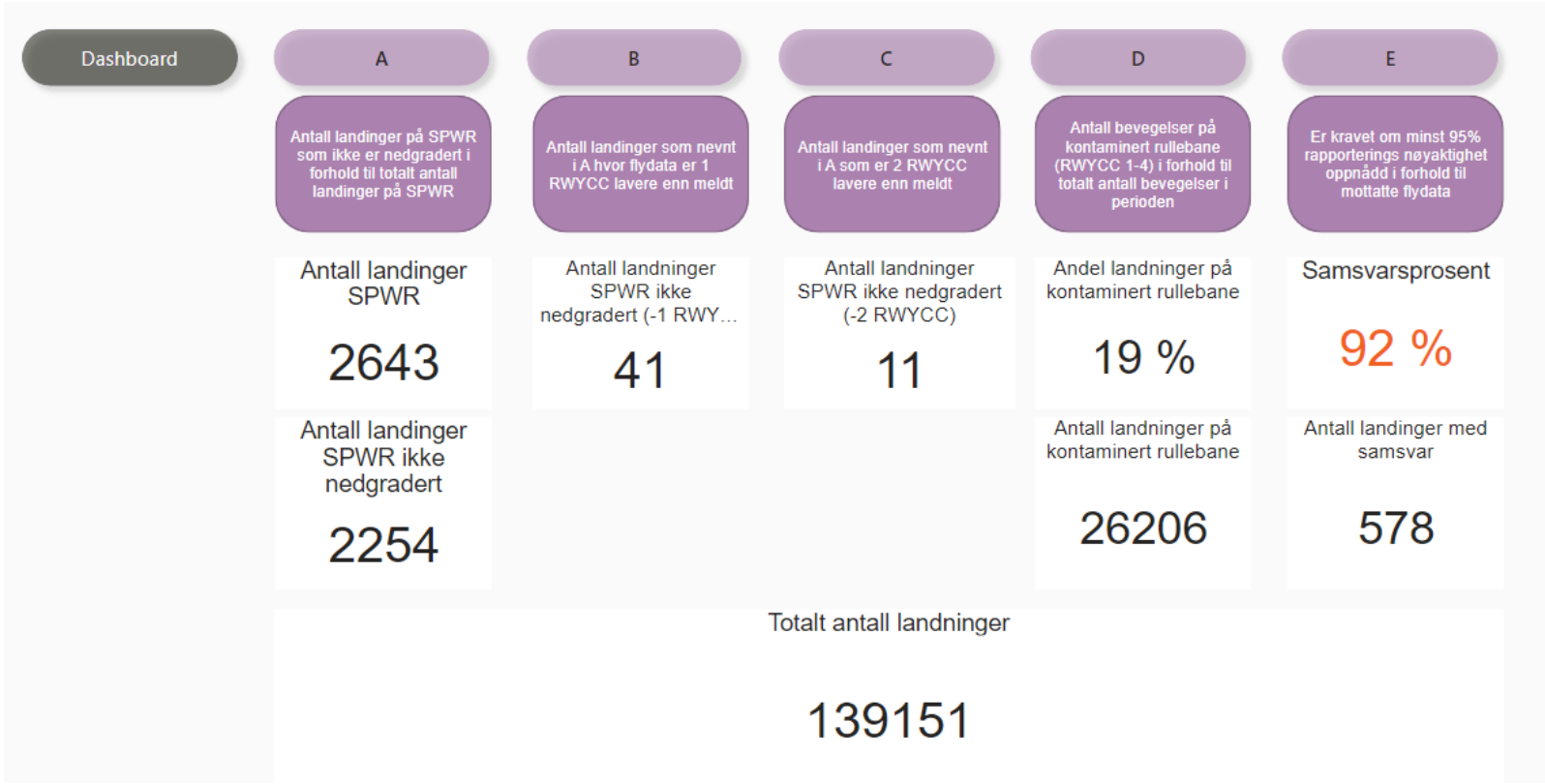


Dette illustrerer dataflyten til en Snowtam fra AVRB-applikasjonen via Manus til EAD og videre til IPPC og øvrige informasjons- og briefingsystemer.

Total overwiew winterseason 22/23



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What we have learned

upside

- GRF was a new way of thinking for supervisor.
- Matching RCR VS flightdata gives us valuable information.
- RCAM is more accurate for Norwegian winter conditions.
- Fully automated reporting chain.

Downside

- Forgetting old format has taken time for some of our supervisors.
- Getting a conclusion is challenging for supervisors.
- Winter changes, more temperatures around zero degrees, even in the northern part of Norway.

If we fail to implement SPWR, all thats left is memories of air trafikk.

Ronny Andersen
Projekt manager

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