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# IMPROVED WATER RESOURCE MANAGEMENT USING NEWLY LAUNCHED SPACE ASSETS

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## SNOW MEASUREMENTS



## WATER SYSTEM MEASUREMENTS



# SnowInfo

**Quick and secure login**

**Easily switch between internal or external information layers**

**Easily switch between different catchments. The statistics table is automatically updated**

**Use slider to explore the dynamics in the data**

**Compare this years daily SCF data with statistics from previous years**

**Snow Cover DEMO**

**Layers**

**Snow Cover Fraction**

**Snow Cover Fraction**  
Hallingdal  
April 30th 2016 **SCF: 74.8%**

Yearly graphs  
2006, 2016

2001-2015  
Average  
Min/max  
2016  
2006

1% Snow 100%

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61,299, 5,339, 8 30 km 10 mi

# WaterInfo

**CHANGES IN WATER LEVEL**

Water level (m)

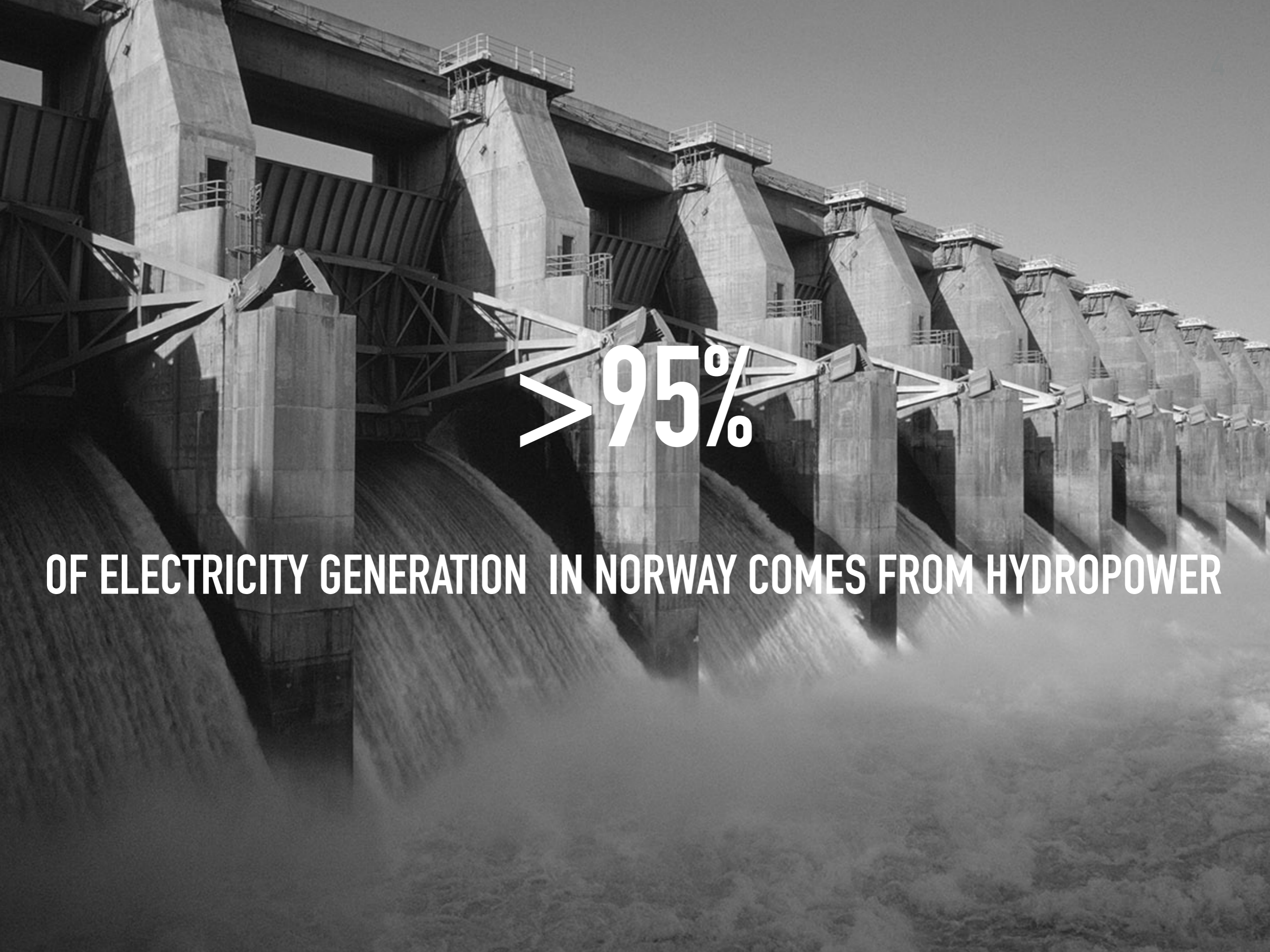
DOY

♦ ♦ ♦ ♦ S1 vannstand, 2015  
 ▲ ▲ ▲ ▲ S1 vannstand, 2016  
 — NVE vannstand, 2015  
 - - - - NVE vannstand, 2016

**Data** **Style** **Options** **STOV**

**Layers**

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**> 95%**

**OF ELECTRICITY GENERATION IN NORWAY COMES FROM HYDROPOWER**

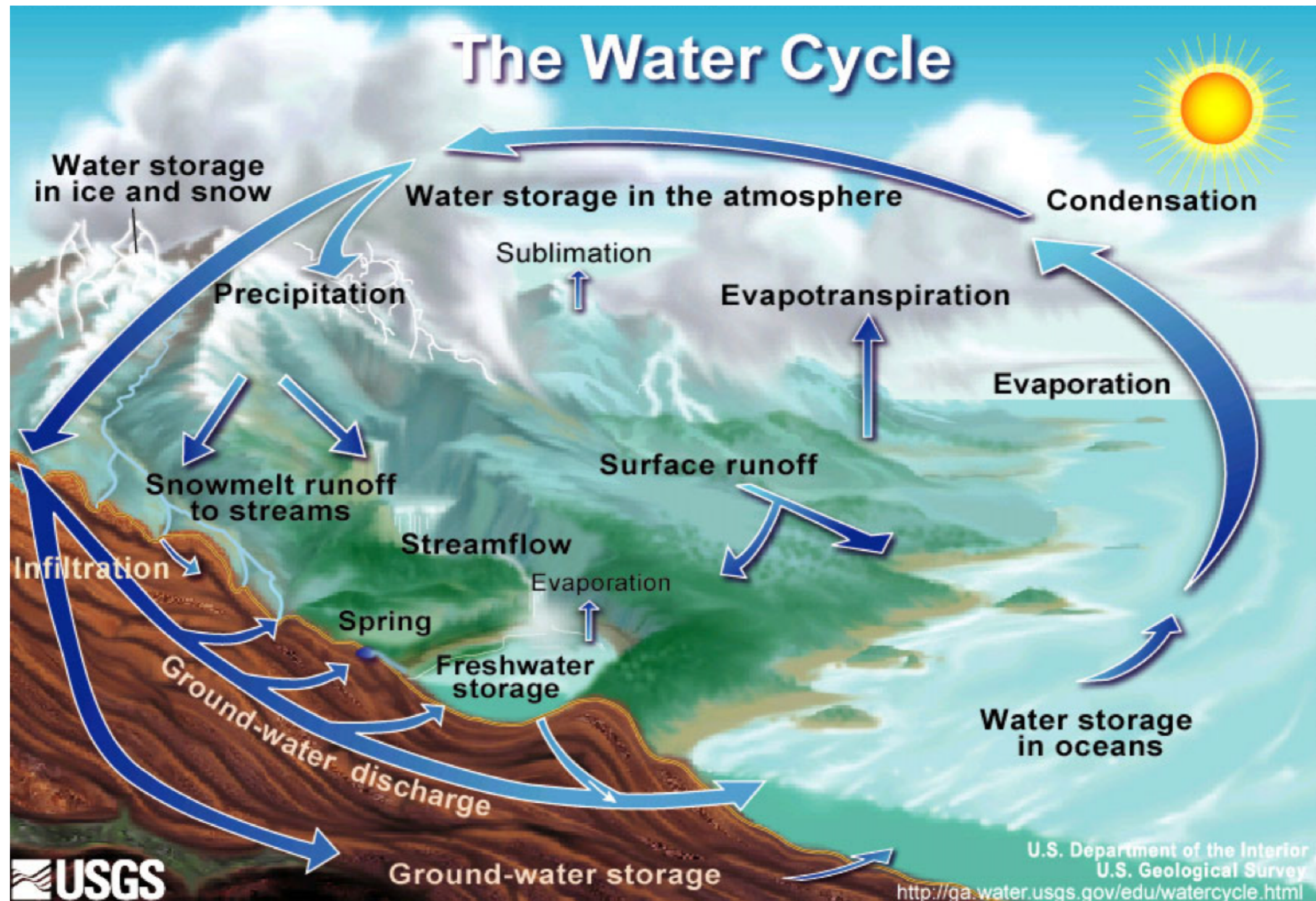
# THE AMOUNT OF WATER IN THE SYSTEM AFFECTS MARKET DEVELOPMENTS



## “HYDRO” OPERATIONS CAN POTENTIALLY HARM BIOLOGICAL – AND PLANT ECOSYSTEM



# MODELLING TOOLS ARE ESSENTIAL TO UNDERSTAND OUR ENVIRONMENT



# FREE AND OPEN DATA ENABLES NEW SERVICE DEVELOPMENTS



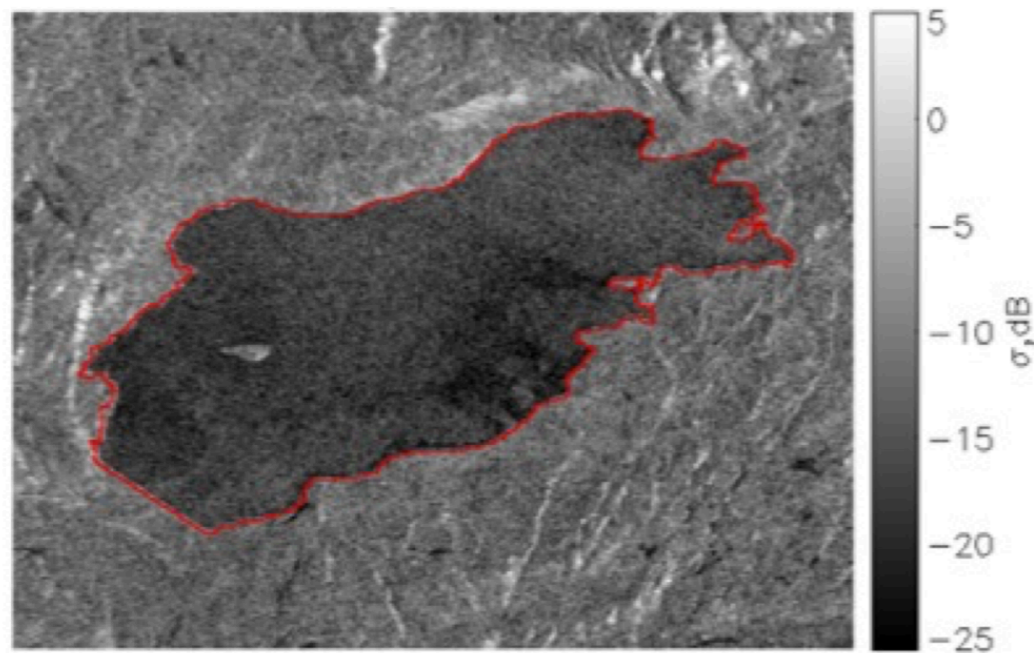
Credit: European Space Agency (ESA)



# QUANTIFYING SURFACE WATER EXTENT USING RADAR MEASUREMENTS

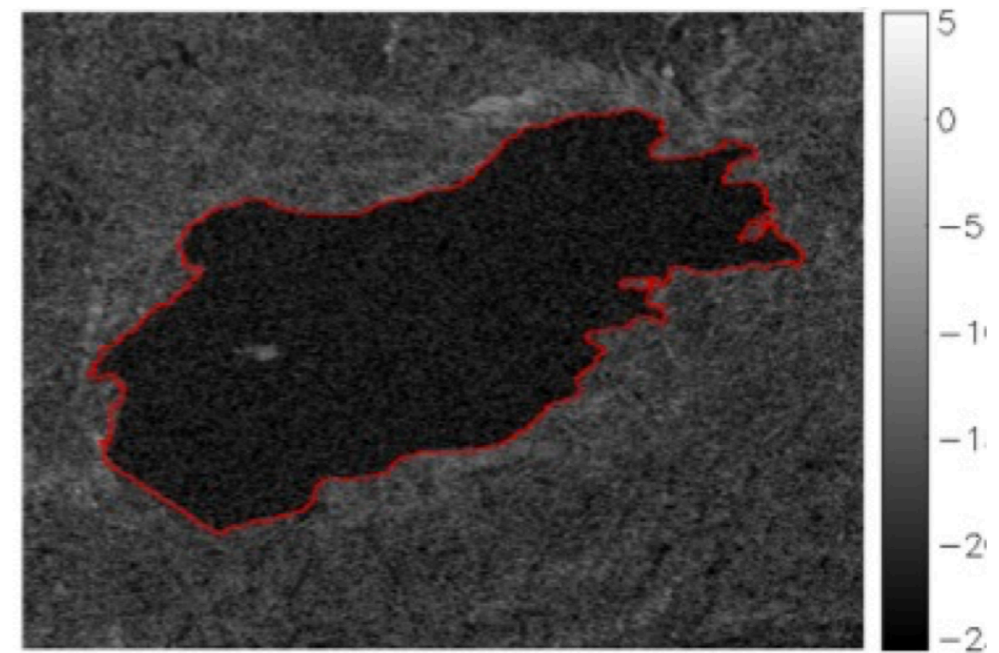
Satellite: Sentinel-1a/b  
Pixel resolution: 5m x 20m

Area (Sentinel-1) = 10.1869 km<sup>2</sup>



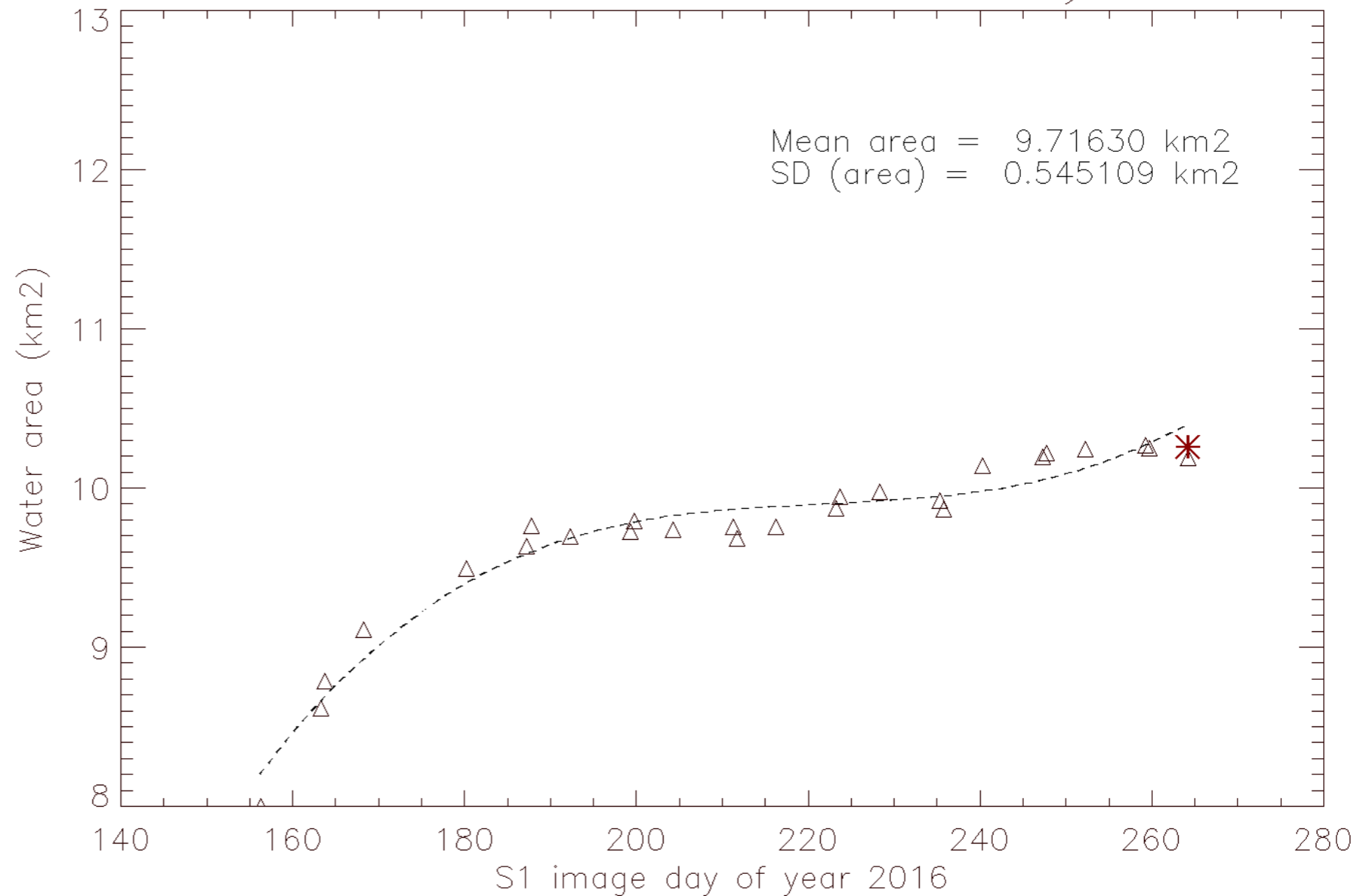
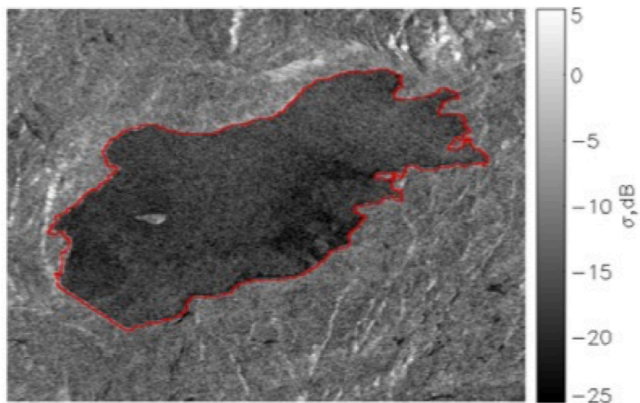
Satellite: Radarsat-2  
Pixel resolution: 3m x 3m

Area (Radarsat-2) = 10.2595 km<sup>2</sup>



Difference = 0.06 km<sup>2</sup>, or 0.7% av RS2-area

## QUANTIFYING SURFACE WATER EXTENT USING RADAR MEASUREMENTS CONT'D



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# HOW DID WE GET HERE AND WHERE ARE WE TODAY?

## ▶ **Step 1: Idea stage**

- ▶ Won Norwegian Copernicus competition in 2016 (Globesar AS)
- ▶ Demonstrate accuracy
- ▶ Verify customer interest

## ▶ **Step 2: Develop and demonstrate service**

- ▶ ESA - IAP program, Two-Phase approach
- ▶ Extensive application process
- ▶ ESA is your business partner

## ▶ **Step 3: Launch fully operational Service**

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