ACIX

Atmospheric Correction Inter-comparison Exercise

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- What?

- **ACIX**: international collaborative initiative to **inter-compare** a set of **atmospheric correction (AC) processors** for high-spatial resolution optical sensors
- Focus on **Landsat-8** and **Sentinel-2** imagery

- Better understanding of the different uncertainty contributors and help in improving the AC processors

- Why?

- **Free** and **open** data access policy to **Landsat-8** and **Sentinel-2** imagery has stimulated the development and operational use of AC processors for generating Bottom-of-Atmosphere (BOA) products

- ACIX results are expected to point out:
  - **strengths & weaknesses**
  - **commonalities & differences**

  of **AC processors** for their further improvement

- How?

ACIX will be performed in **three** phases:

1. **Definition of the inter-comparison protocol:**

   Participants are invited to propose a protocol for the AC processors inter-comparison. All the proposals will be discussed at the 1st workshop and the final inter-comparison procedure will be agreed by all participants.

2. **Application of the AC processors:**

   Participants will apply their AC schemes for a set of test sites keeping the processing parameters constant. The results will be submitted for analysis to ACIX coordinators.

3. **Analysis of the results:**

   ACIX coordinators will process the results submitted by all participants and will assess the inter-comparison outputs based on the agreed metrics. All the results will be presented and discussed during the 2nd ACIX workshop.

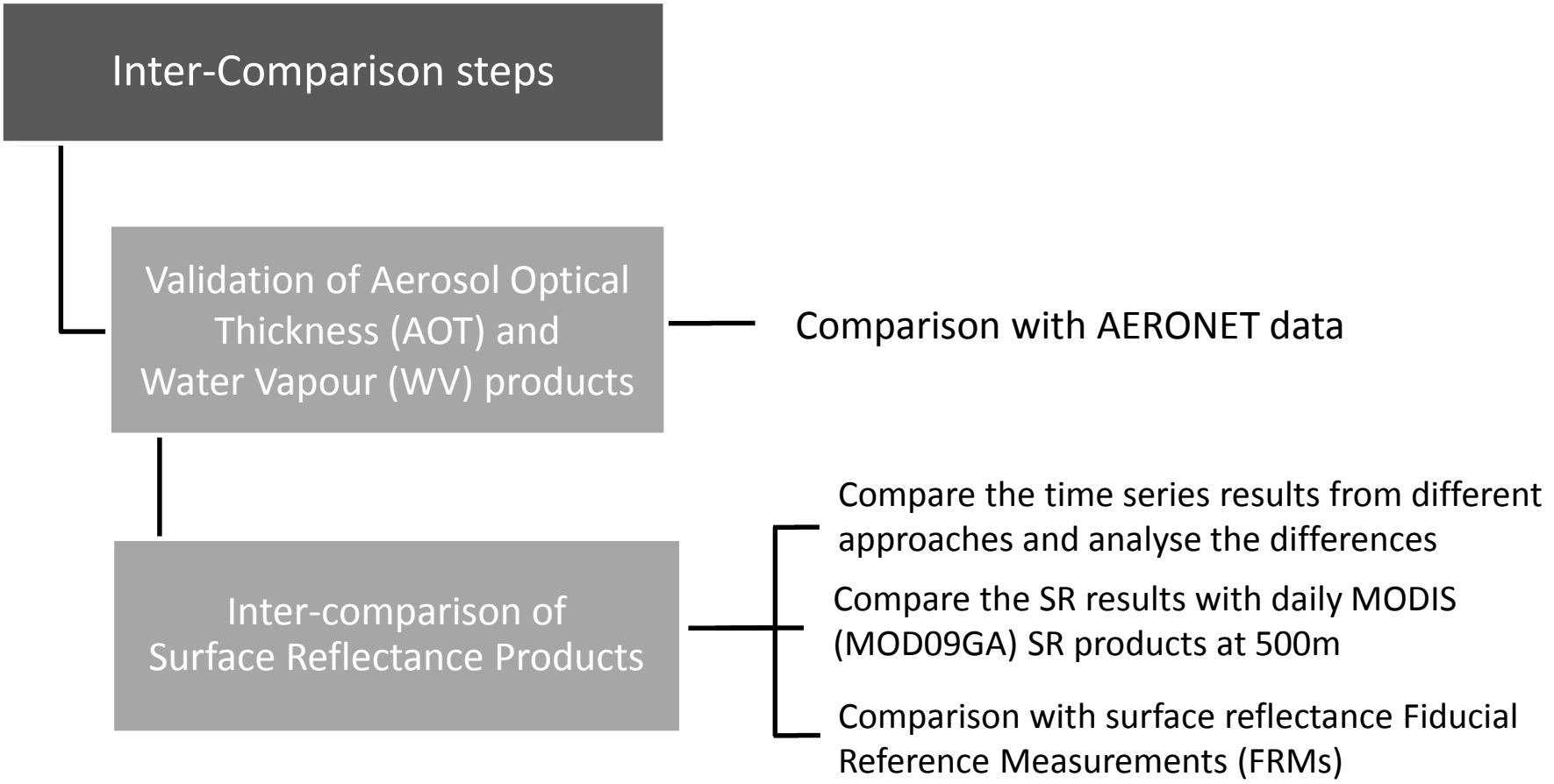
- Inter-comparison Protocol:

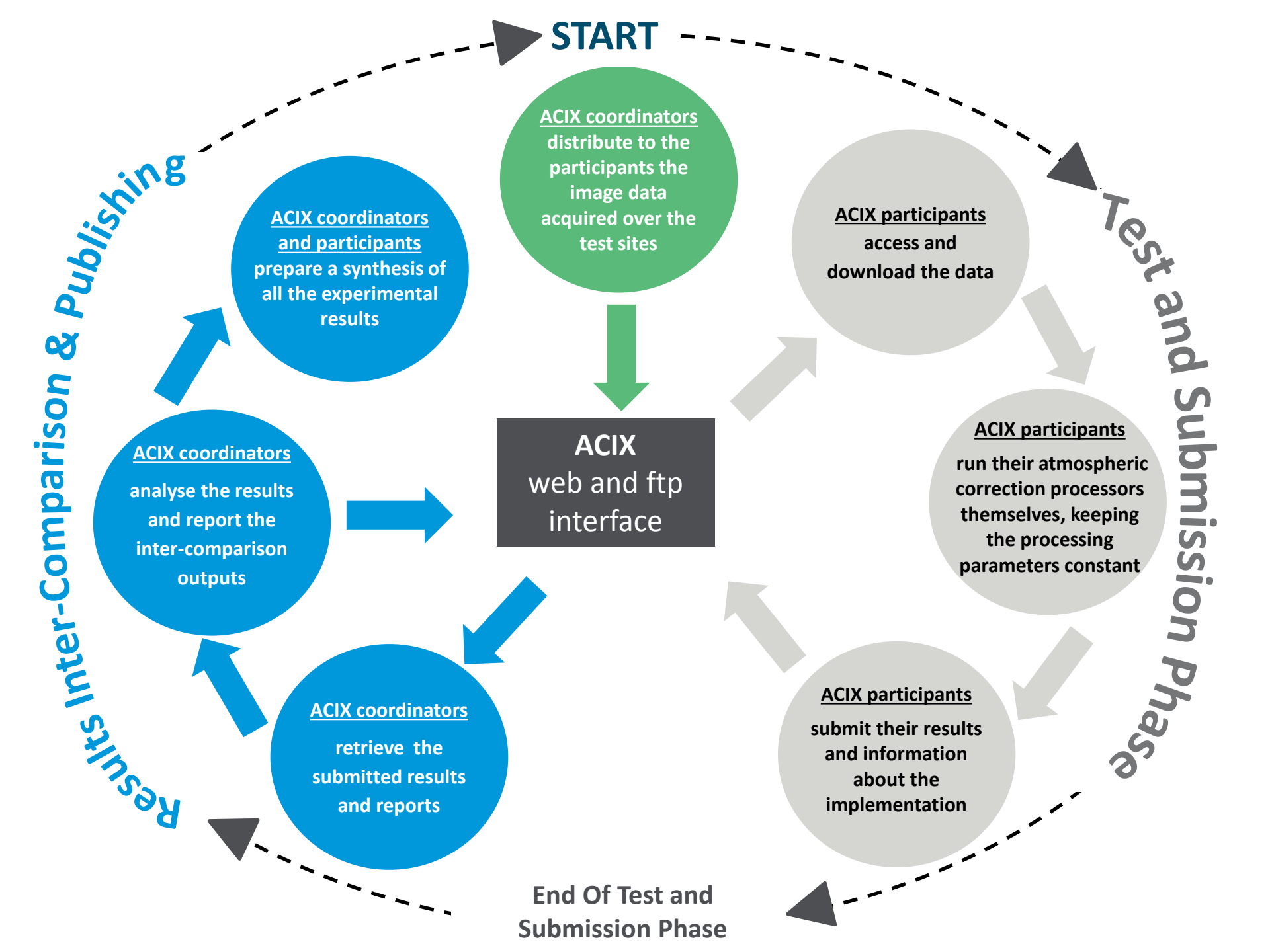
Test Sites (TBD at the 1st Workshop)

Test Sites	Sensors	Time period
▪ **Temperate site:** - Arcachon (FRA): *forest, water, vineyard* - ARM_Darwin (AUS): *wetlands, urban* - Davos (CHE): *forest, snow, agriculture* - Beijing (CHN): *urban, mountains* - Lake_Lefroy (AUS): forest, sand, rocks - Pretoria_CSIR-DPSS (RSA): urban, semi-arid - Yakutsk (RUS): forest, river, snow ▪ **Arid site:** - Banizoumbou (NER):*desert, cropland* - Capo_Verde (CPV): *desert, ocean* - SEDE_BOKER (ISR): *desert* ▪ **Equatorial Forest:** - Alta Floresta (Brazil): cropland, urban, forest - Pontianak (Indonesia) : cropland, urban, forest ▪ **Boreal site:** - Rimrock (USA) - Pickle_Lake (USA)	**Landsat-8**	**1 year** acquisitions (temporal resolution=16days)
	Sentinel-2A	At least **6 months** (temporal resolution=10days)

- Inter-comparison Protocol:

Inter-Comparison Metrics (TBD at the 1st workshop)




START
ACIX coordinators distribute to the participants the image data acquired over the test sites
ACIX participants access and download the data
ACIX participants run their atmospheric correction processors themselves, keeping the processing parameters constant
ACIX participants submit their results and information about the implementation
End Of Test and Submission Phase
ACIX coordinators retrieve the submitted results and reports
ACIX coordinators analyse the results and report the inter-comparison outputs
ACIX coordinators and participants prepare a synthesis of all the experimental results
Results Inter-Comparison & Publishing
Test and Submission Phase
ACIX
web and ftp interface

- When?

Important Dates	
~~**1st Workshop Announcement**~~	~~25 January 2015~~
~~**1st Workshop Registration Deadline**~~	~~15 March 2016~~
1st Workshop Preliminary programme	30 April 2016
Proposals for AC inter-comparison protocol Deadline	31 May 2016
1st Workshop of CEOS-WGCV Atmospheric Correction Inter-comparison Exercise	**21-22 June 2016**
Results Submission Deadline	15 September 2016
Results Analysis Report	15 November 2016
2nd Workshop of CEOS-WGCV Atmospheric Correction Inter-comparison Exercise	December 2016/ January 2017

- Who?

- **12** atmospheric correction processors
- **6** countries: Belgium, China, France, Germany, Spain, USA
- **13** organisations, institutes, universities, companies

- Where?

<u>1st ACIX workshop (21-22 June 2016) venue</u>:

Earth System Science Interdisciplinary Center (ESSIC) at the University of Maryland Research Park in USA

<u>2nd ACIX workshop venue</u>:

Venue and dates to be defined

(Dates in December 2016/ January 2017 timeframe)

- Expected outcomes

- Description of **concept**, **protocols** and **procedures** for inter-comparing and validating products
- Assessment of the **relative differences** among the inter-compared **AC processors** results and FRMs
- Definition of **key regions** and **key periods** for validation and quality assessment
- Description of a **coordinated plan** for **inter-comparison** and **validation activities**

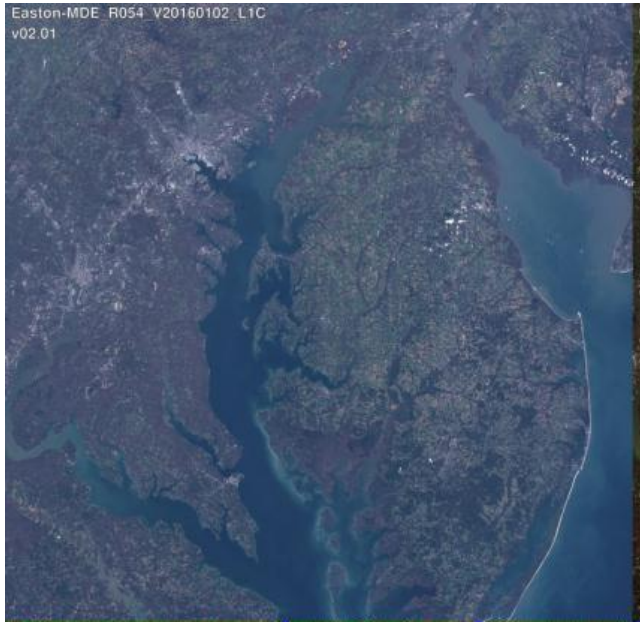
Sentinel- 2A :

Site Name: **ARM_Manacapuru (Brazil)**
Zone: **Tropical**
Relief: **Flat**
Land Cover: **Tropical Forest**
Image Acquisition Date: **9th of January 2016**

TOA	BOA at 10m	BOA at 60m
		

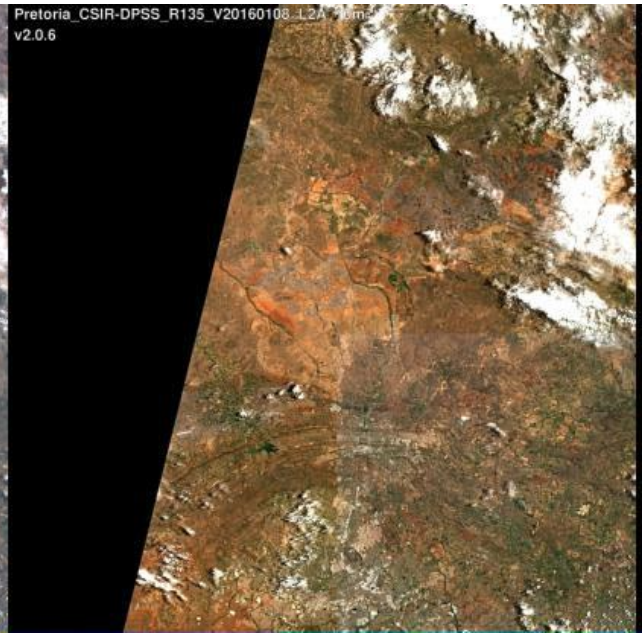
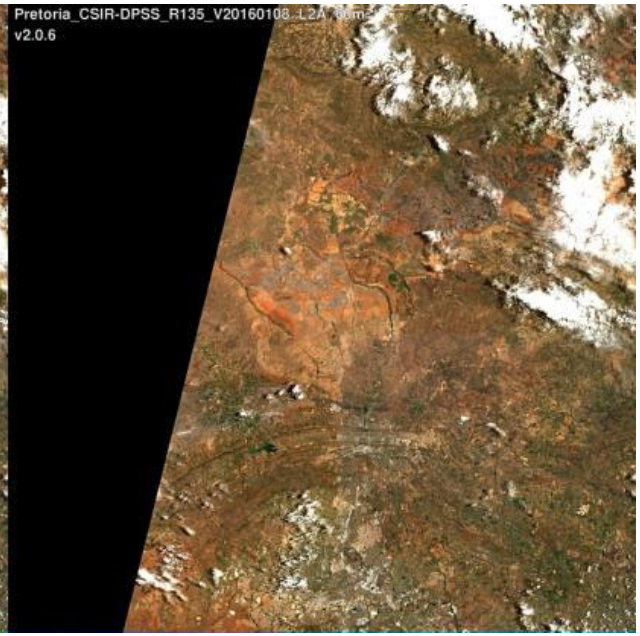
Sentinel- 2A :

Site Name: **Urban Easton-MDE (USA)**
Zone: **MidlatitudeN**
Relief: **Flat**
Land Cover: **Forest, Croplands, Water**
Image Acquisition Date: **2nd of January 2016**

TOA	BOA at 10m	BOA at 60m
		

Sentinel- 2A :

Site Name: **Pretoria_CSIR-DPSS (RSA)**
Zone: **SubtropicalS**
Relief: **Flat & Mountainous**
Land Cover: **Urban, Semi-Arid**
Image Acquisition Date: **8th of January 2016**

TOA	BOA at 10m	BOA at 60m
		

Thank you - any questions?

For further information:

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https://earth.esa.int/web/sppa/meetings-workshops/acix