

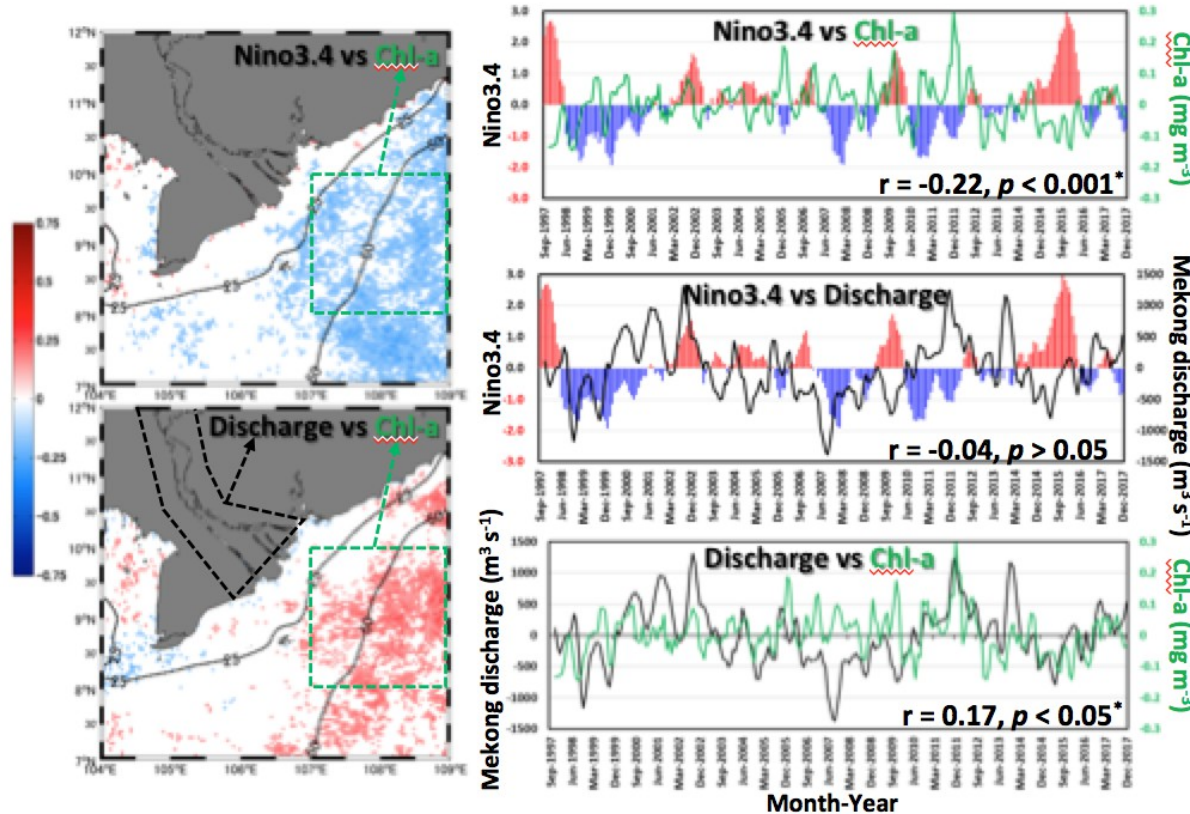
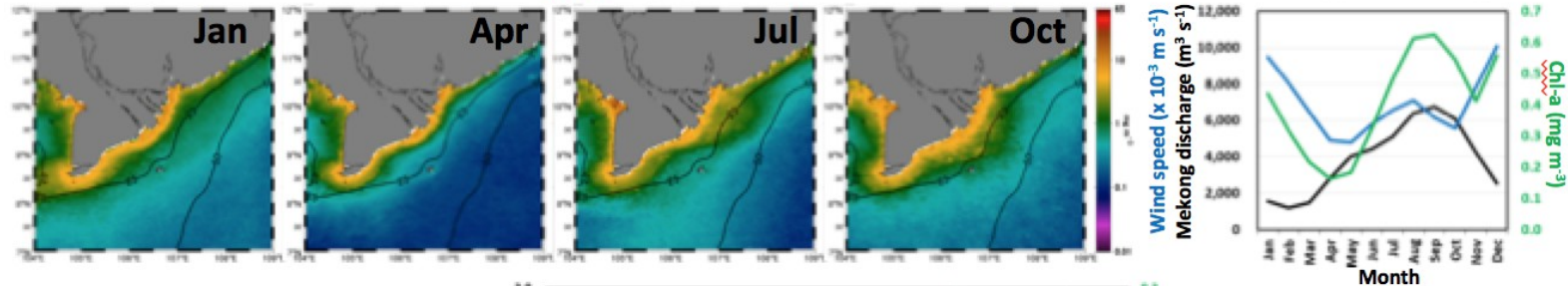
**By**  
Dr. Eko Siswanto  
(JAMSTEC)

**Main object:**

- Construction of terrestrial and marine low-trophic level organism database with moderate resolution (4-km, 8-day) and free-cloud (interpolated) data.
- Use the constructed database to see the impact of climate change and human activities on the low-trophic organisms.

# Investigation of the Impacts of ENSO through Mekong River discharge modulation

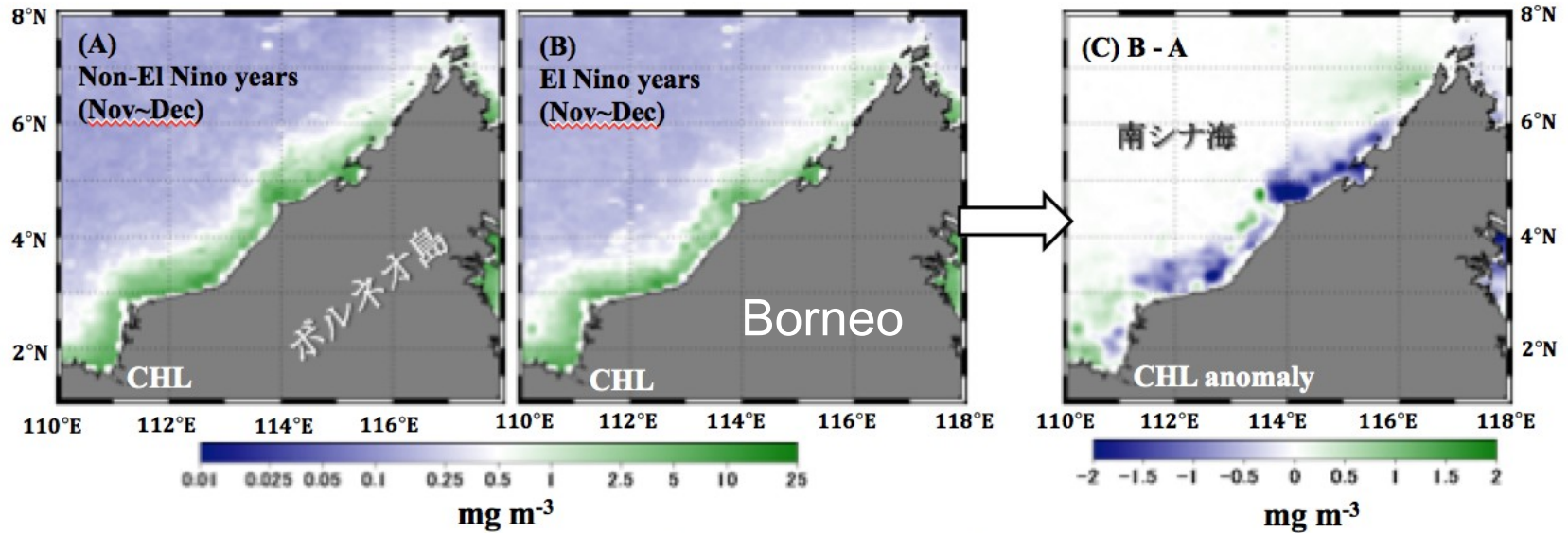
## Phytoplankton biomass (Chl-a) spatiotemporal variation off Mekong estuary



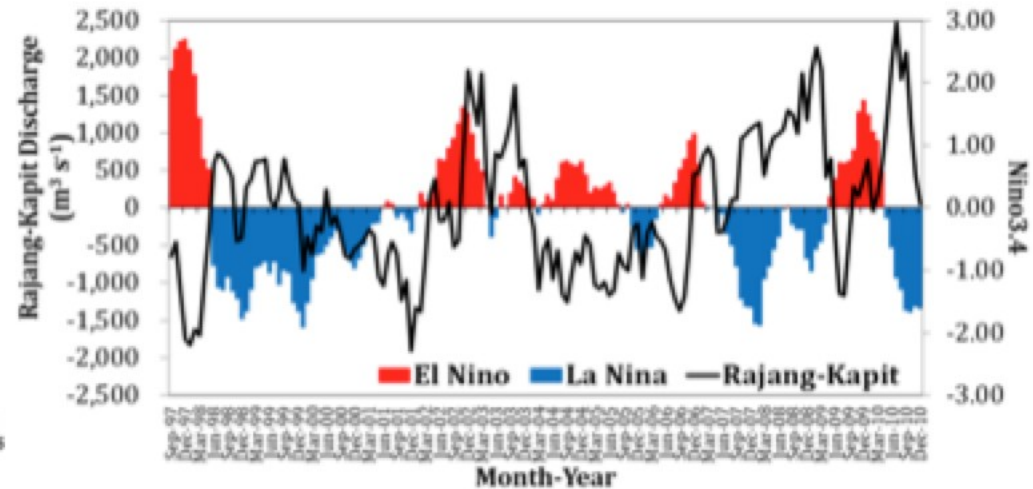
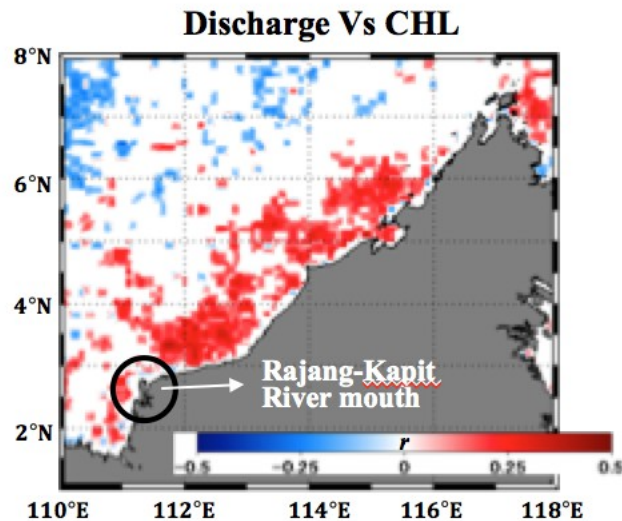
- Chl-a seasonal variation is attributed to monsoon wind & river discharge
- ENSO, by modulating discharge (and maybe winds), influences Chl-a interannually
- Robust analysis (such as lag-correlation, EOF, MLRa) is needed to clarify factors driving Chl-a interannual variation

- Seemingly with no-lag no-lag correlations. positive discharge-Chl correlation indicated nutrient input from land is very important for ocean primary production.
- Negative Nino3.4-Chl correlation indicated during El Nino, Chl has tended to decline. This is probably because during El Nino river discharge has tended to decline.

# Impact of ENSO on phytoplankton biomass through river discharge



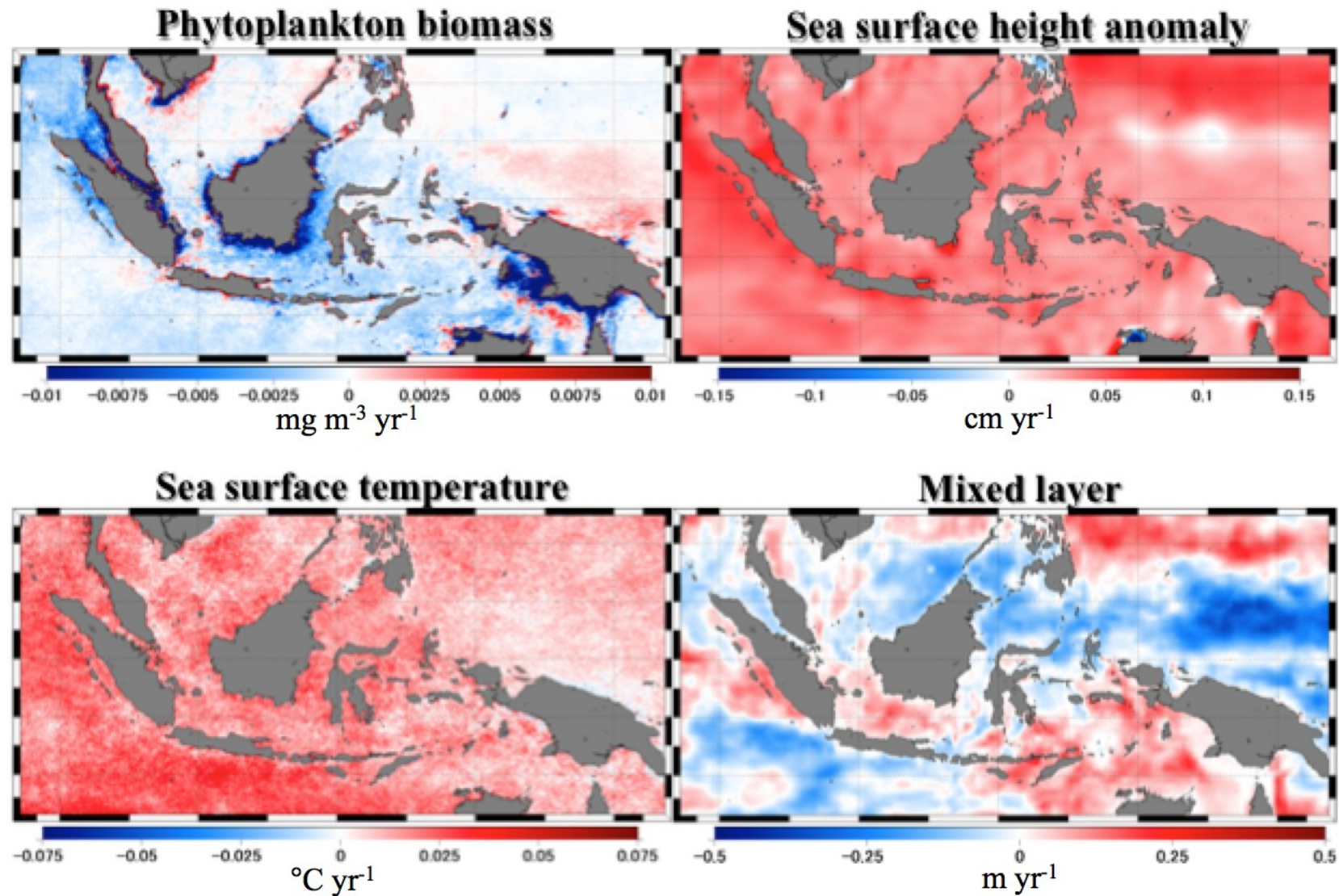
**El Nino** → Low discharge → Low phytoplankton biomass  
**La Nina** → High discharge → High phytoplankton biomass



*Due to the reduction of nutrient supply from the river system during El Nino.*

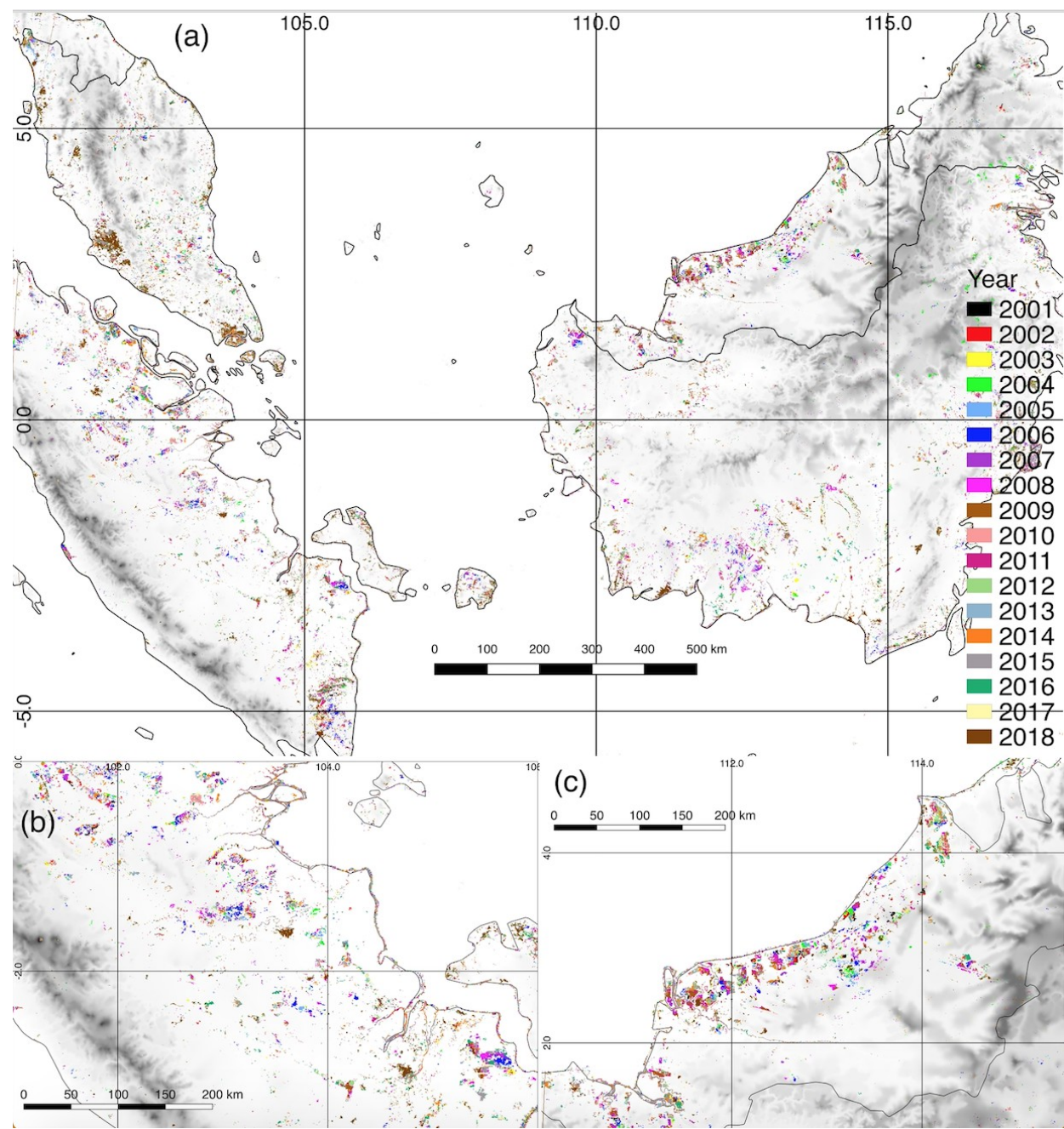
# *Two-decade robust linear trends in the South East Asian marine environments*

## **Long-term trends (1997 ~ 2016)**



# Land cover and land use change (deforestation, plantation, afforestation) in insular South-East Asia

Year-to-year deforestation map by analysing MODIS Terra/Aqua satellites with 500 m resolution



[Yahara et al. will be submitted]



# Discrimination of tree species by referring to the characteristics of plant phenology (flowering, leaf-flush, leaf-colouring) and structure

Aerial photograph by drone observations in “Satoyama” ecosystem, Japan

14 Mar. 2019



26 Apr. 2019



17 May 2019

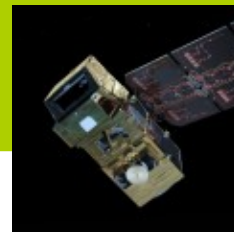


Blooming of  
*Castanopsis  
sieboldii*  
(chinquapin)



[Special thanks to Dr. Ishibashi, Chiba Univ.]

*Seasonal RGB images observed by SENTINEL-2  
at Koishikawa Botanical Garden in Tokyo (10m res.)*



19 December 2017

28 April 2018

0 100 200 300 400 m

0 100 200 300 400 m

13 April 2018

26 August 2018

0 100 200 300 400 m

0 100 200 300 400 m



# Discrimination of tree species by analysing seasonal change of canopy surface caused by blooming and leaf-flush

28 April 2018



# Phenology observations by advanced optical satellites (e.g., SLATS; Tsubame, m resolution)

At Koishikawa Botanical Garden in Tokyo on 8 May 2019

The screenshot displays the Tellus web interface. The main map shows a grayscale satellite image of a residential area with a central green space. A data selection panel on the right is open, showing the following options:

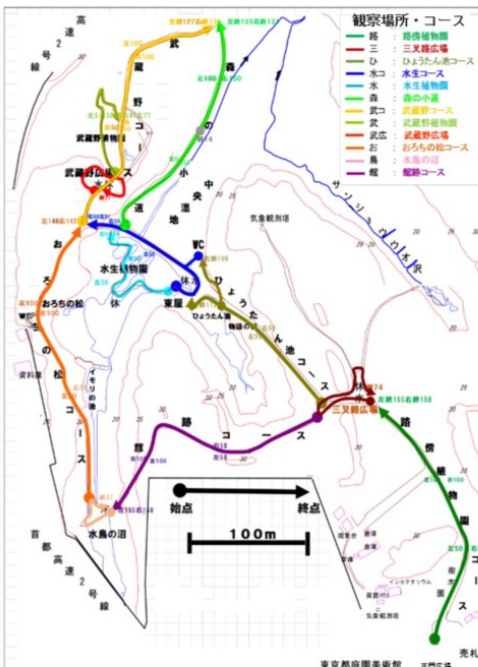
- データ選択: モノクロベース地図(Open Street Map)
- 衛星データ:
  - つばめ(SLATS)小石川中心
  - つばめ(SLATS)赤坂迎賓館中心
  - 光学画像(ASRARO-1)
  - SAR画像(PALSAR-2)
  - 光学画像(AVNIR-2)
  - 植物活性度(AVNIR-2)
  - 光学画像(Landsat)
- 標高データ(ALOS-PRISM):
  - 標高30mメッシュ
  - 高低差着彩図
  - 影

The playback control bar at the bottom shows the date and time: UTC 2019 / 1 / 1, with a playback speed of 1 and a 50m scale bar. The coordinates are 35.669107, 139.600953, corresponding to 35.42° N, 139.44° E.


# Collection of in situ phenological observation data

**植物開花リスト他 2018/4/26**

△つぼみ ○咲き始め ◎花が見頃 ●花がそろそろ終わり  
◆実が未熟 ★実が見頃



種名	観察場所						
	木	草	三	ひ	水	水	武
アイロニウセキショウ						○	
アヤメ						◎	
ウグイスカグラ	木	★					
オニタビラコ	草					●	
オヘイイチゴ	草					◎	
オヤブシラミ	草					○	
カキツリタ	草					○	
カニツリガサ	草					○	○
ガトウタンポポ	草	★				●	
キクムグラ	草	◎					
キュウリガサ	草					●	
コゴメツギ	木	◎				◎	
ササバギンラン	草						◎
シノバタツナミ	草						●
シャガ	草					●	◎
ジャクワイバラ	木						◎
ジュロ	木					◎	
スダジイ	木	◎				◎	
タマノカンアオイ	草						◎
チョウジソウ	草					◎	◎
ツボスミレ	草					●	
ツルウメドキ	木					◎	
トウバナ	草	◎	◎	◎	◎	◎	
トベラ	木	○					
トボシガラ	草	◎	◎	◎	◎	◎	
ナルコユリ	草					○	
ニシキギ	木	◎					
ノイバラ	木					○	○
ハクウンボク	木					◎	
ハナイバナ	草					●	
ハルジオン	草	◎	◎	◎	◎	◎	
フジ	木	●					
フタリスカ	草	◎				◎	
ヘイイチゴ	草	●	★	●			
ホウチャクソウ	草					◎	
ホオノキ	木					◎	
マユミ	木			○	△		
マルバウツギ	木	○					
ミスギ	木	◎	◎	◎	◎	◎	
ミノイチゴツナギ	草	●				◎	
ムサシアブミ	草	●					●
ムベ	木					●	
ムラサキワギゴク	草					◎	
ヤブタビラコ	草	●	◎	◎	◎	◎	◎
ヤブデマリ	木						



<http://www.ins.kahaku.go.jp/season/bgimage.php?id=0001524899476518&p=2>

□ □ Weekly flowering phenology information published on the web site of Institute for Nature Study, National Museum of Nature and Science in Shirokanedai, Tokyo

国立科学博物館 National Museum of Nature and Science

標本・資料統合データベース

大 中 小

標本・資料統合データベース > 詳細検索(生物季節観察データ)

生物季節観察データの詳細検索・フリーワード検索を実行します。

詳細検索(生物季節観察データ)

種和名(全角カナ)  部分一致 ▼ 項目内AND検索 ▼

別名・総称名・その他(全角カナ)  部分一致 ▼ 項目内AND検索 ▼

科和名(全角カナ)  部分一致 ▼ 項目内AND検索 ▼

科名(学名)  部分一致 ▼ 項目内AND検索 ▼

属名(学名)  部分一致 ▼ 項目内AND検索 ▼

種小名(学名)  部分一致 ▼ 項目内AND検索 ▼

種命名者  部分一致 ▼ 項目内AND検索 ▼

[<http://db.kahaku.go.jp/webmuseum/>]

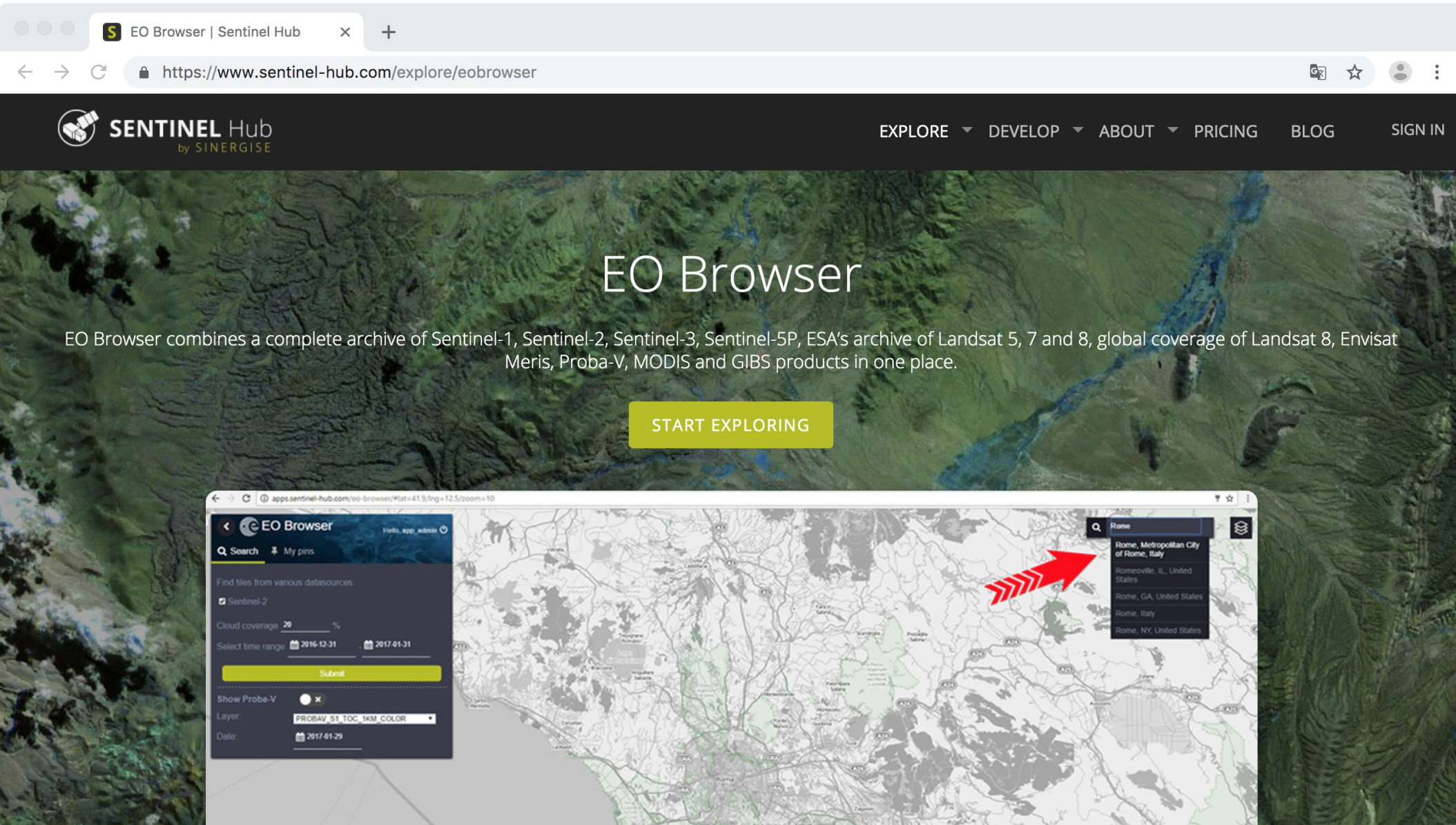
▲ Collection Database of Specimens and Materials published by Institute for Nature Study, National Museum of Nature and Science

[<http://www.ins.kahaku.go.jp/index.php>]

# Development of open GIS platform for analysing the spatio-temporal variability of biodiversity (SENTINEL-Hub, Google Earth Engine)

*Firstly, please check your interesting regions and sites by yourself !!*

[<https://www.sentinel-hub.com/explore/eobrowser>]



The image shows a screenshot of the Sentinel Hub EO Browser website. The top navigation bar includes the Sentinel Hub logo (by SINERGISE) and menu items: EXPLORE, DEVELOP, ABOUT, PRICING, BLOG, and SIGN IN. The main content area features a large satellite map of a mountainous region with the text "EO Browser" and a description: "EO Browser combines a complete archive of Sentinel-1, Sentinel-2, Sentinel-3, Sentinel-5P, ESA's archive of Landsat 5, 7 and 8, global coverage of Landsat 8, Envisat Meris, Proba-V, MODIS and GIBS products in one place." A yellow button labeled "START EXPLORING" is positioned below the text. In the bottom left, there is an inset window showing the EO Browser interface with a search bar, filters for Sentinel-2, and a search results dropdown for "Rome, Italy". A red arrow points to the search results.

SENTINEL Hub  
by SINERGISE

EXPLORE ▾ DEVELOP ▾ ABOUT ▾ PRICING BLOG SIGN IN

## EO Browser

EO Browser combines a complete archive of Sentinel-1, Sentinel-2, Sentinel-3, Sentinel-5P, ESA's archive of Landsat 5, 7 and 8, global coverage of Landsat 8, Envisat Meris, Proba-V, MODIS and GIBS products in one place.

START EXPLORING

EO Browser

Search

Find files from various datasources

Sentinel-2

Cloud coverage: 20 %

Select time range: 2016-12-31 2017-01-31

Submit

Show Proba-V:

Layer: PROBAV\_S1\_TOC\_1KM\_COLOR

Date: 2017-01-29

Rome

- Rome, Metropolitan City of Rome, Italy
- Romeville, IL, United States
- Rome, GA, United States
- Rome, Italy
- Rome, NY, United States