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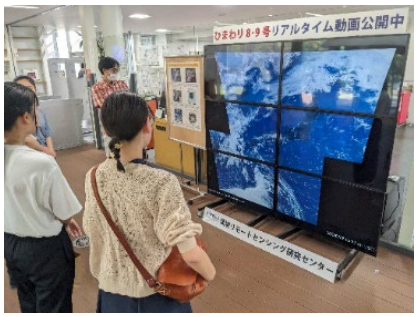
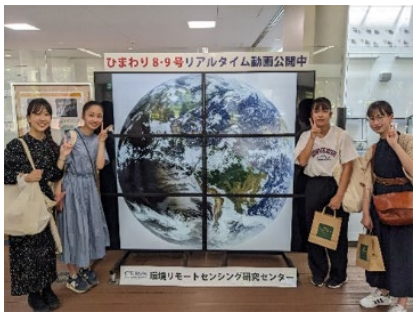
木更津高校地学部の皆さんが来訪

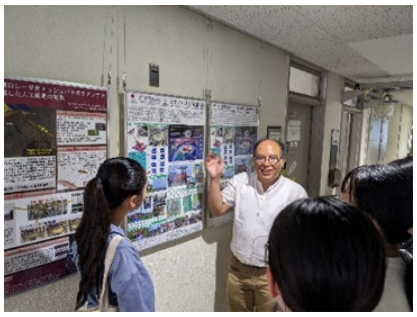
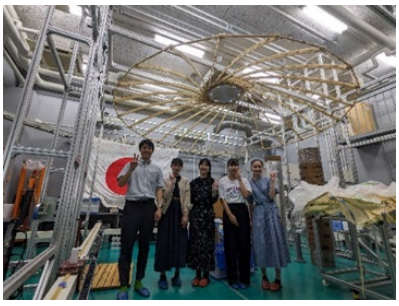
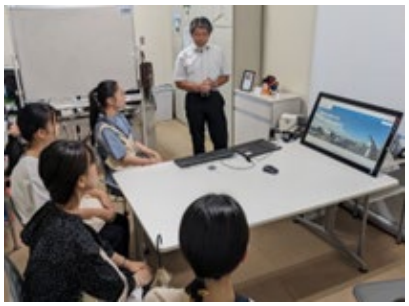
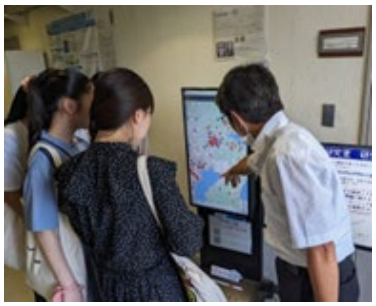
～ 入江研究室、ヨサファット研究室、樋口研究室を見学 ～

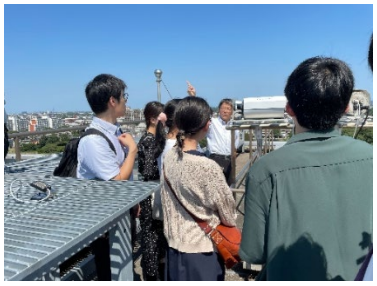
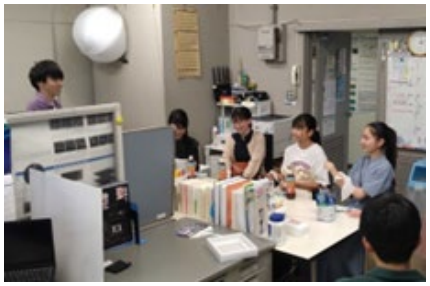
7 月 26 日、今年も木更津高校から、久世・入江・齋藤研 OB の神谷先生と地学部の 1 年生 4 名が来訪されました。午前中には図書館オープンオープンスペースに設置されたひまわりディスプレイを見学し、4k 6 枚の大画面で展開される地球の“今”を堪能しました。その後、ヨサファット研に無人航空機、航空機、小型衛星搭載用の円偏波合成開口レーダ（CP-SAR）と、マイクロ波リモートセンシングのセンサの開発設備を見学しました。入江先生から、研究室の紹介、POTEKA NET、スカイラジオメーター実機の説明を建物内で、その後、猛暑の中でしたが、屋上の観測サイトの見学を。屋上では入江先生、M2 藤井さん、M1 野本さんと米谷さんが説明し、生徒の皆さんが熱心に話を聞いていました。

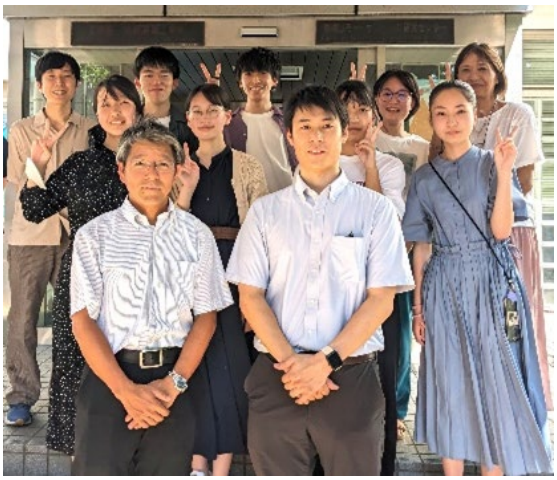
研究室に戻り「地学部の活動について」「大学受験について」などの質問にも、B4 溝渕さんたちが経験を熱心に答えてしていました。高校 1 年生の時点で文系という人が多いそうですが、「木更津市の天気予測」につながる研究など、意識高く取り組む姿勢に、メンバーも驚いていました。参加者の皆さん全員がよい刺激を得ることができた交流となったようです。







当日の様子は入江研 HP にも掲載されていますので、ご覧ください。
木更津高校の地学部の皆さんが来訪 | 入江研究室（地球大気環境研究室）（irie-lab.jp）
https://irie-lab.jp/kisarazuhs/

鉄道総合技術研究所との共同研究契約を締結しました

～ 小槻研究室通信・第 25 号～

この度、鉄道総合技術研究所との共同研究契約を締結いたしました。鉄道総合技術研究所では、鉄道の安全な運行に資する様々な研究が実施されており、その一環として小槻研究室で行っているデータ駆動型の雨量計配置決定手法を応用する事を計画しています。鉄道運行において、雨量計の情報は豪雨時の鉄道運行休止決定に使用され、社会的影響が非常に大きく重要な役割を持ちます。私たちの技術を応用することで、より効率的な雨量計情報の運用を可能とし、鉄道運行における安全性向上へ貢献することを目指します。

（塩尻大也）

インドネシア政府文部科学省 World Class University プログラム ディポネゴロ大学より学生 4 名来学

ヨサファット研究室にて勉強中のディポネゴロ大生 4 名を紹介します。日本同様島国のインドネシアは海洋大国ならではの環境問題も多く、各々課題テーマを決め取り組んでいます。

Name	:	Asqita Rakhma Ashari
Research Plan	:	Oil Spill Trajectory Prediction Using Sentinel-1 SAR (Synthetic Aperture Radar) in Northern Waters of Bintan Island
Affiliation	:	Master Program of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Diponegoro University

Northern waters of Bintan Island are a water area directly adjacent to Singapore and Malaysia. This area is located in ALKI (Alur Laut Kepulauan Indonesia); sealanes established under the international

conventions on the law of sea. As a waterway and international trade route, the northern waters of Bintan Island are always busy and have high ship mobility. With that activity, northern water of Bintan Island has the potential to be polluted by oil spill.

Oil spills in the sea can be detected through remote sensing using radar; Sentinel-1 SAR (Synthetic Aperture Radar). There are some stages in oil spill detection which include spatial subset view, calibration, geometric correction, and filtering. The result of filtering stages will analyze with adaptive threshold method in SNAP software. This method processed dark objects, which are an indication of an oil spill, using the Oil Spill Detection Tool. Dark object or dark spot in this method is a pixel with a value lower than the threshold.

Oil spill cases in northern waters of Bintan Island almost occur every year. Oil spill can disturb the biodiversity because it has toxic particles. There are some biodiversity in Northern waters of Bintan Island which include fish, clams, seaweed, coral reef, seagrass, mangrove, and marine mammals (Dugong dugon). It is important to monitor the oil spill in the northern waters of Bintan Island. The oil spill has a potential to damage aquatic ecosystems, disrupt biota life, disrupt tourism activities, and can even damage fishing boat nets. Therefore, in the case of an oil spill, it is necessary to study the predictive pattern of the distribution of oil spills in order to get the right countermeasures.

Name	:	Riva Namira Nadeak
Nickname	:	Riva
Research title	:	Analysis of High-Frequency Oil Spill Area Based on Digital Processing of Sentinel-1A Synthetic Aperture Radar (SAR) Satellite Imagery in Natuna Sea Waters, Riau Islands Province
Affiliation	:	Study Program of Oceanography (Bachelor Degree), Faculty of Fisheries and Marine Science, Diponegoro University

Hello, my name is Riva Namira Rahmania Nadeak but you can call me Riva. I have a bachelor's degree in Oceanography. I graduated from Diponegoro University, Indonesia. The research that I did before is about Oil Spill. The title is "Analysis of High-Frequency Oil Spill Area Based on Digital Processing of Sentinel-1A Synthetic Aperture Radar (SAR) Satellite Imagery in Natuna Sea Waters, Riau Islands Province". The Natuna Sea waters in Riau Islands Province is one of the world's sea trade routes with many ships activities, so it potentially affected by oil spills from the ships. Oil spills can affect the sustainability of marine ecosystems. This study was aimed to analyze the area with high frequency of oil spills occurrence. Analysis used time series Sentinel-1A SAR satellite images from October 2021 to June 2022. Sentinel-1A SAR satellite image datas were processed using Sentinels Application Platform (SNAP) software. The oil spill frequency analysis used Adaptive Threshold method. The result showed that the area with the most high frequency of oil spills occurrence was located at Northwest area near to Pemping Island.

Name	:	Nur Rizki Sari
Research Plan	:	Analysis of Potential Fishing Ground for Tuna (Thunnus sp.) in the Western Sumatra Sea Based on Sub-Surface Temperature
Affiliation	:	Master Program of Aquatic Resources Management, Faculty of Fisheries and Marine Science, Diponegoro University

Tuna (Thunnus sp.) is a large pelagic fish that is one of Indonesia's primary

export commodities and has received a certificate from the MSC (Marine Steward Council) regarding good quality of tuna, thereby increasing demand for tuna for local and export needs. Spatial potential tuna's fishing grounds can be predicted more accurately by processing oceanographic data in the form of sub-surface temperatures in the waters and catch data from the dominant fishing gear used in PPS Bungus. This is because the vertical distribution of tuna is strongly influenced by temperature and swimming depth.

This study aims to determine the pattern of the spatial distribution of tuna fishing grounds (Thunnus sp.) from sub-surface temperature data at depths of 50-180 m in the west and east monsoons and to determine the distribution of potential zones of tuna fishing grounds (Thunnus sp.) in the Western Sumatra Sea based on the ECDF method. This study is expected to provide information regarding spatial distribution patterns and potential areas for tuna fishing grounds to facilitate fishermen to catch tuna effectively and efficiently.

The material studied in this study are coordinate points data on tuna caught in the waters of West Sumatra (WPP 572) from fishing boats at PPS Bungus, West Sumatra, from January 2018 to May 2023. The processed variable is the sub-surface temperature of the Western Sumatra Sea at depths of 50-180m. Interviews will be conducted to support information regarding the catch and fishing gear by 15 respondents based on the purposive sampling method. The Empirical Cumulative Distribution Function (ECDF) method defines the distribution of tuna potential fishing ground.

Keywords : Thunnus sp., temperature, depth, Western Sumatra Sea

Name	:	Hanan Az Zahra Syafina
Nickname	:	Hana
Research title	:	Deciphering Mangrove Ecosystem Dynamics through Multitemporal Satellite Imagery: A Land Use and Land Cover Transformation Study in Segara Anakan, Cilacap District
Affiliation	:	Study Program of Aquatic Resources Management (Bachelor Degree), Faculty of Fisheries and Marine Science, Diponegoro University

Segara Anakan is a large lagoon located on the south coast of Central Java. The rapid rate of change in land cover is a problem and a threat to mangrove ecosystems such as environmental pollution and conversion of mangrove land cover for other purposes such as clearing rice fields and making ponds. The purpose of this study was to determine changes in the trend of mangrove land cover, land cover use, and changes in mangrove ecosystems in Segara Anakan for 31 years. The method used in this study is supervised classification and then use field data and image data validation accuracy. This research was carried out in October 2022 by taking ground check data in Segara Anakan, Cilacap Regency. Changes in the trend of mangrove land cover for 31 years showed that the area of mangrove land cover in 1990 had the highest area of 7,955.01 Ha (82.51%), in 2003 it was 7,134.52 Ha (75.33%) and experienced a decrease in 2021 that is 6,946.89 Ha (73.64%). Significant land use changes in the 1990-2003 period were mangrove land turning into ponds of 535.16 Ha, bodies of water turning into mangroves of 435.11 Ha, and mangroves turning into rice fields of 312.25 Ha. The period 2003-2021 significant land changes were mangroves turning into bodies of water of 906.47 Ha, ponds turning into mangroves of 572.88 Ha, bodies of water turning into mangroves of 475.72 Ha, and

mangroves into ponds of 469.10 Ha. The impacts that occur as a result of this degradation are shoreline abrasion, siltation and the formation of new land (acretion), seawater intrusion, and a decrease in biodiversity.

皆さん、体に気を付けて頑張ってください!