TERM OF REFERENCE (TOR) INTERNATIONAL VIRTUAL COURSE (IVC)
Topic: Climate Change in the Past, Present, and Future (IVC22-121)

Study Program of Oceanography
Faculty of Earth Sciences and Technology
Institut Teknologi Bandung
August 22nd September 16th, 2022

Background
Climate change has been one of the most interesting issues for the past few decades because it is very related to human life sustainability. To Understand the change itself requires thorough information about climate in the past, locally and globally. By doing this, the current climate condition can be compared, and the future can be predicted.

Objectives
1. To overview climate conditions in the past including detailed physical properties in the atmosphere, ocean, and ice.
2. To introduce various proxies used to get information about the paleoclimate.
3. To introduce modeling that can be used to predict future climate conditions.

Program Overview

which will be delivered by class activities. Class activities are held to deliver new insights and knowledge of climate change, it
in order to initiate the discussion of emerging issues and the prospect of research in the earth sciences and study contribution as an innovation for a better earth.

Class Activities

Lectures	Participants attend classes where the lecturers deliver materials on specific topics, followed by discussion sessions.
Group Discussion	Students conduct discussions about given tasks and compile a report as an output.
Assignments	Students accomplish the assignment and send it to the requested directory

Organizing Committees
  Dr. Irwan Meilano (Executive Advisor)
• Dr. rer.nat. Mutiara R. Putri (Executive Advisor)
• Dr. Agus Mochamad Ramdan (Executive Advisor)
• Dr. rer. nat. Rima Rachmayani (Person in Charge)
  Mika R. Puspaningrum, PhD (Person in Charge)
  Erlin Beliyana, S.Si., M.Si., Adnya Pratiwi, M.Sc., Iwan P. Anwar, M.Si. (Research Assistant)

Rizqi Valentra, S.T., Adam Librian, Salsabila (Secretary)
- Siti Tamalia Zuraydah, A.Md., An-Nur, Isma Wulandini (Department of Logistic and Network)

Speakers
1. Prof. Dr. Sri Yudawati Cahyarini (National Research and Innovation Agency, Indonesia)
2. Dr. Gino De Gelder (ISTerre, Université Grenoble-Alpes, France, and BRIN Postdoctoral)
3. Dr. Donaldi Permana (Meteorological, Climatological, and Geophysical Agency)
4. Dr. Muhammad Rais Abdillah (Institut Teknologi Bandung)
5. Prof. Dr. Miriam Pfeiffer (Kiel University, Germany)
6. Supari, Ph.D (Meteorological, Climatological, and Geophysical Agency)
7. Dr. Rina Zuraida (National Research and Innovation Agency, Indonesia)
8. Dr. Albertus Sulaiman (National Research and Innovation Agency, Indonesia)
9. Siswanto, M.Sc. (Meteorological, Climatological, and Geophysical Agency)
10. Prof. Michael N. Evans (University of Maryland, USA)
11. Dr. Yudha Setiawan Djamil (National Research and Innovation Agency, Indonesia)
12. Prof. Dr. Hendrik Vogel (University of Bern, Switzerland)
13. Prof. Ashok Karumuri (University of Hyderabad, India)
14. Dr. rer. nat. Maria Proborukmi (Institut Teknologi Bandung)
15. Dr. Dilruba Erkan (Université de Paris 1 Panthéon-Sorbonne, France, and BRIN Postdoctoral)
16. Dr.rer.nat. Rima Rachmayani (Institut Teknologi Bandung)
17. Dr. Laurent Husson (ISTerre, Université Grenoble-Alpes, France)

Participants
The participants of this course consist of undergraduate and graduate students from various universities around the world, also some professionals from Indonesia.

Program Timeline
This course will be held on 22 August   16 September 2022. Detailed timeline can be seen on the table below.

Week	Day/Date	Time	Activity	PIC
Week 1	Monday,			

					Mod.: Faiz, S.Si., M.Si.
Week 2	Monday, August 29th 2022	15-17.00	Coral Paleoclimatology in the Tropical Indian Ocean		Lec.: Prof. Dr. Miriam Pfeiffer Mod.: Dr.rer.nat. Rima Rachmayani
	Tuesday, August 30th 2022	15-17.00	Future Climate of Southeast Asia		Lec.: Dr. Supari Mod.: Faiz, S.Si., M.Si.
	Wednesday, August 31st 2022	15-17.00	Marine Sediment Proxy		Lec.: Dr. Rina Zuraida Mod.: Iwan P. Anwar, S.Si., M.Si.
	Thursday, September 1st 2022	15-17.00	Nonlinear Dynamics of Earth Climate Modeling		Lec.: Dr. Albertus Sulaiman Mod.: Dr. Muhammad Rais Abdillah
	Friday, September 2nd 2022	15-17.00	Change of Climate Variability in the Indo-Pacific region in the simulated collapsed AMOC		Lec.: Siswanto, M.Sc. Mod.: Faiz, S.Si., M.Si.
Week 3	Monday, September 5th 2022	15-17.00	Global and Tropical Climate Change; Paleoclimate Data Acquisition, Modeling, Analysis, Synthesis.		Lec.: Prof. Dr. Michael N. Evans Mod.: Dr. Dr.rer.nat. Maria Sekar Proborukmi
	Tuesday, September 6th 2022	15-17.00	Holocene Paleoclimate Modeling		Lec.: Dr. Yudha Setiawan Djamil Mod.: Adnya Pratiwi, M.Sc
	Wednesday, September 7th 2022	15-17.00	-		-
	Thursday, September 8th 2022	15-17.00	Orbital and Millennial-scale Climate Change as Viewed from Continental Climate Records		Lec.: Prof. Dr. Hendrik Vogel Mod.: Vera, S.T.
	Friday, September 9th 2022	16-18.00	ENSO Mainly During Last Millennium An ENSO, Its Recent Changes, and Its Future Projections		Lec.: Prof. Ashok Karumuri Mod.: Dr.rer.nat. Rima Rachmayani
Week 4	Monday, September 12th 2022	15-17.00	Palynology		Lec.: Dr.rer.nat. Maria Sekar Proborukmi Mod.: Vera, S.T.
	Tuesday, September 13th 2022	15-17.00	Urban Geography and Urban Sociology		Lec.: Dr. Dilruba Erkan Mod.: Erlin Beliyana, S.Si., M.Si.

	Wednesday, September 14th 2022	15-17.00	Web-based interface: Solutions La2004 from -50 Myr to +20 Myr	Lec.: Dr.rer.nat. Rima Rachmayani Mod.: Salsabila
	Thursday, September 15th 2022	15-17.00	Paleobiogeography	Lec.: Dr. Laurent Husson Mod.: Dr. Tubagus Solihuddin
		17.00-18.00	Closing Ceremony	Organizing Committee

Additional Information

Listed below are the key points to be discussed on the course:

1. General knowledge about Paleoclimate and Climate Change.
2. Proxies that can be observed related to paleoclimate.
3. Future climate projections and modeling.

Standard Operating Procedure (SOP)

General:

- The course will be held on Zoom
- Participants are expected to comply with the SOP

Course SOP:

1. All lecturers must deliver the course with the camera open, using the designated virtual background.
2. Participants use username on the zoom meeting under the format: [Institution/ University] (Space) Full Name
3.
4. QnA session will be held after the lecture through Zoom chat box or directly by unmuting the microphone. The QnA session is conducted by the moderator.
5.   -

1. **jp k k   odji i   jk idb   dji 0**
   - Moderator officially opens the course session.
2. **G op   d o j p odji 0**
   - Modera
3. Lecture session (60-**2**
   - The lecturer delivers the topic for 60-70 minutes minutes.
4. QnA session (30-**1**
   - Each course will only have one QnA session guided by the moderator.
5. Closing session
   - Moderator arranges a photo session before closing the session.

Course Completion

To complete the program, participants need to attend the entire course and submit a final report on a given task. Participants that completed the program will be awarded a certificate and a course transcript along with the score (for registered students). However, to convert the score to index for credit transfer purposes, additional payment is required.

Undergraduate Study Program of Oceanography

Faculty of Earth Sciences and Technology

Institut Teknologi Bandung

2nd Floor, Labtek XI, ITB Campus

Jalan Ganesha 10, Bandung 40132, Indonesia

Phone +62 22 2500494, Fax +62 22 2534159

Website http://www.oceanography.fitb.itb.ac.id