MeteoMeet No.11 Presents:

Istanbul Technical University Atmospheric Modeling Team

METAR
İSTANBUL TEKNİK ÜNİVERSİTESİ
METEOROLOJİK ARAŞTIRMALAR KULÜBÜ

METEOXCHANGE

İTÜ
İSTANBUL TEKNİK ÜNİVERSİTESİ
1773

*Who are we?

*How you can find us on the Internet?

*Our Vision and Our Mission

*What we've done so far

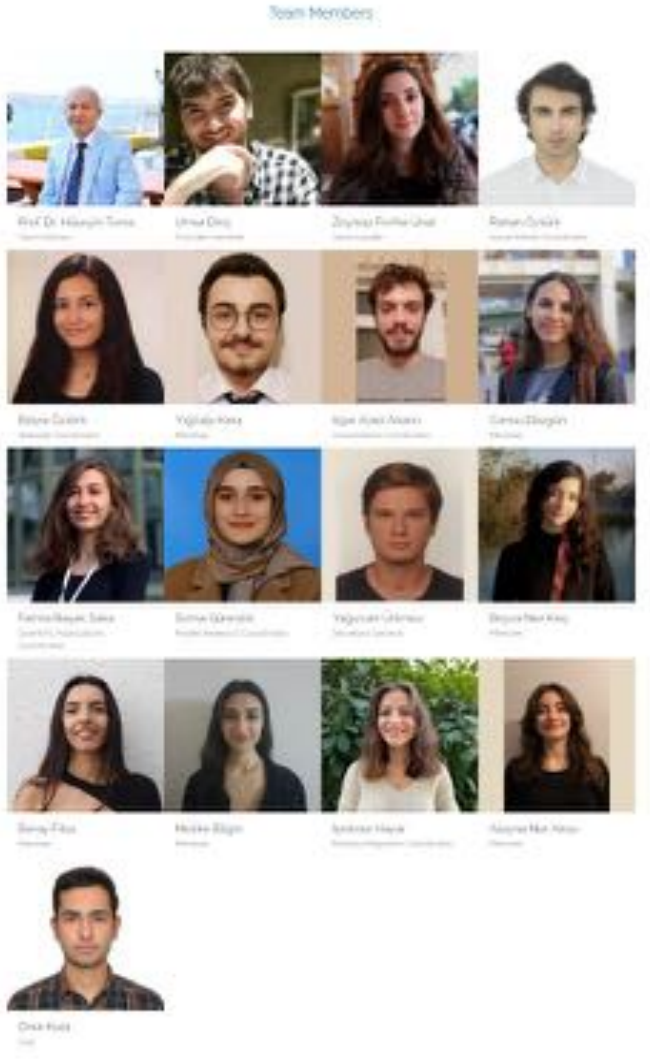
Who are we?

ITU Modeling Team was established in 2015 by students of Istanbul Technical University Meteorology Engineering under the guidance of Prof. Dr. Hüseyin Toros. It is an expertise team operating under the ITU Meteorological Research Club.
Studies that started on the research of air quality have expanded their scope over time with the effective use of atmospheric models. Continuing its work with the mission of contributing to mo development so that atmospheric models, which are the basis of weather forecasts, give more successful results and can make longer-term predictions, our team aims to reduce inconsistencie forecasts.
ITU Atmospheric Modeling Team, which aims to become a team known for its modeling studies the international platform, runs and visualizes WRF and WRF-Chem models daily, and conducts research and development studies on parameterization. Our team, which is also a follower of innovative studies, participates in national and international scientific events.

Team Members

Aleyna Nur Aksu (Senior Year as UG)
Beray Fitöz (Newly graduated from BSc)
Beyza Nur Kılıç (Senior Year as UG)
Büşra Öztürk (MSc Programme at ITU)
Cansu Düzgün (MSc Programme at Florida State)
Fatma Başak Saka (MSc Programme at ITU)
Ilgar Ataol Akalın (Senior Year as UG)
İpek Nur Hazar (Senior Year as UG)
Onur Kula (Senior Year as UG)
Rahan Öztürk (PhD Programme at ITU)
Sema Güneşlik (Newly graduated from BSc)
Umur Dinç (MSc Graduate)
Yağızcan Ürkmez (Newly graduated from BSc)
Yiğitalp Kara (Newly graduated from BSc)
Zeynep Feriha Ünal (MSc Graduate)

Today, it has 15 members who are trying to move forward both individually and as a team by blending what they have learned in lessons with their curiosity.



How you can find us on the Internet?

We are trying to be a active on social media channels as we can, here are all of them:

Contact

www.modelleme.itu.edu.tr

itumodellemetakimi@gmail.com

Our Social Media Accounts

twitter.com/itumodelleme

instagram.com/itumodelleme

ITU Atmospheric Modelling Team

https://github.com/itumodelleme

Our Vision and Our Mission

Our Vision;

Our team was established in 2015 and started to work with the aim of becoming a team known for its modelling activities -especially in WRF modelling community due to it's a quite large community with open source models- worldwide and continues in this direction.

Our Mission;

It is to work to contribute to the development of atmospheric models, which are the basis of weather forecasts, so that they can give more successful results and make longer-term forecasts. Thus, it aims to reduce the inconsistency in the estimates. For this purpose, we continue to develop our team and ourselves with our atmospheric modeling studies, to communicate with people who make innovative studies to follow the developments about atmospheric models used around the world, to attend relevant conferences.

What we've done so far

7 Paper Submitted (3 European WRF-Chem Workshops [2018-2019], 2 ICOEST'20 [2020], 1 MetMed [2021], 1 RMets [2021])

2 Websites (https://www.havakalitesi.itu.edu.tr & https://www.modelleme.itu.edu.tr)

2 European WRF-Chem Workshop (Istanbul, TR & Munich, DE) [Organizer and Participant]

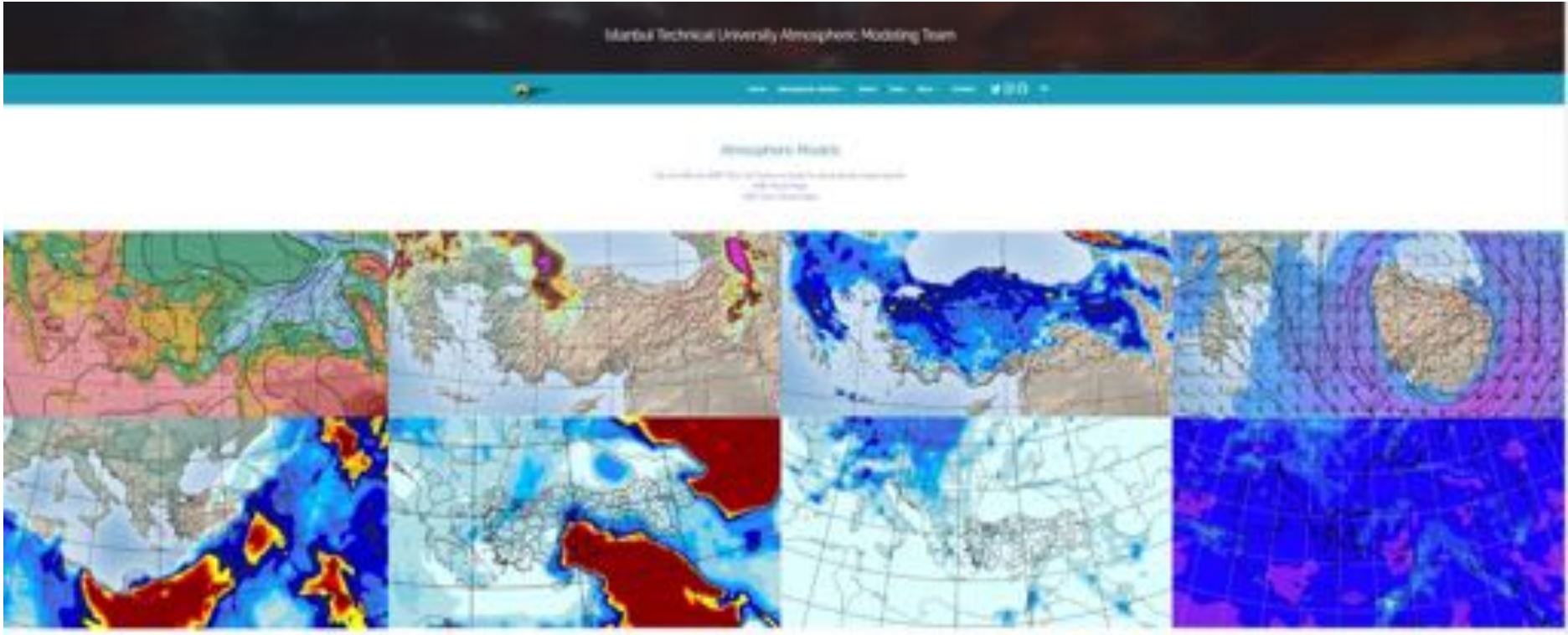
2 Paper Published about COVID-19 & Air Pollution Relationship

1 Discord Channel and 1 Whatsapp Group ☺

Countless Zoom, Skype ve Hangouts meetings…

What we've done so far

https://www. https://www.modelleme.itu.edu.tr



What we've done so far

2 European WRF-Chem Çalıştayı (Istanbul,TR ve Munich, DE)

What we've done so far

7 Conference/Congress/Workshop Papers (3 European WRF-Chem [2018-2019],
2 ICOEST'20 [2020],
1 MetMed [2021], 1 RMets [2021])

ICOEST BELGRADE

6TH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL SCIENCE AND TECHNOLOGY
October 21-25 2020 Belgrade

Lockdown Effects on Air Pollution with Meteorological Conditions in Istanbul

Zeynep Feriha Ünal [1], Yiğitalp Kara [1], Umur Dinç [1], Rahan Öztürk [1], İpek Çöl [1],

[1] Istanbul Technical

ICOEST BELGRADE

6TH INTERNATIONAL CONFERENCE ON ENVIRONMENTAL SCIENCE AND TECHNOLOGY
October 21-25 2020 Belgrade

Evaluation of Istanbul Air Pollution in Combating COVID-19

Büşra Öztürk [1], İpek Çöl [1], Rahan Öztürk [1], Umur Dinç [1], Yiğitalp Kara [1], Zeynep Feriha Ünal [1], Hüseyin Toros [1]

[1] Istanbul Technical University, Faculty of Aeronautics and Astronautics, Department of Meteorological Engineering, 34469, Maslak, Istanbul, Turkey

Abstract

COVID-19 period changed daily-life such as precautions, restrictions and most importantly lockdowns in almost every country. Turkey has been one of the struggling countries especially the period after 15th of March, 2020. As many scientists from all over the world have been researching coronavirus' medication, COVID-19's possible relations have been also investigated. These relations are mostly focused on the respiratory system and immune system as well as human-to-human transmission. Air pollution is also known as a threatening factor for human life, furthermore China's reduced air pollution is shown in the COPERNICUS Sentinel 5P and TERRA/MODIS AOD images during the lockdown process. In this study, it is aimed to analyze the air pollution in Istanbul while life in Turkey has almost stopped. Ministry of Environment and Urbanization's PM_{10}, $PM_{2.5}$, NO_2, CO, SO_2 and O_3 pollutant datasets are taken into consideration as two different periods which represent the time before the lockdown from Jan 1st to March 15th as first period and during the lockdown from March 16th to May 31st as second period for Istanbul is analyzed. These periods are also examined for the same dates in 2018 and 2019. Results are important to find out how air pollution has decreased in Istanbul during coronavirus lockdown period, especially 40% decrease of NO_2 pollutant in contrast with 2018 and 2019 dataset for the same period of the year in 2020.

Keywords: Atmospheric Pollutants, Istanbul, COVID-19, Lockdown, NO_2

Tuesday, 17:00: **Air Pollution Forecasting with Machine Learning by using WRF-Chem Model Output**

Dinç, Umur[1], Ünal, Zeynep Feriha[1], Toros, Hüseyin[1]

[1] Meteorological Engineering Department, Istanbul Technical University, Istanbul, Turkey

Since the frequent usage of coal for Industrial Revolution during 18th and 19th centuries, air pollution has become more important day by day due to its fatal effects on living creatures and hazardous effects on the environment such as acid rains, climate change and ozone increase. Apparently, the reason behind the air pollution problem is mostly human activities and at that point, forecasting air pollution is important as preventing air pollution sources. Air pollution

Tuesday, 15:00: **A Case Study for Dust Transportation over Istanbul**

Ünal, Zeynep Feriha[1], Dinç, Umur[1], Toros, Hüseyin[1], Kurşun, İlayda[1]

[1] Meteorological Engineering Department, Istanbul Technical University, Istanbul, Turkey

The determination of air quality and the associated air pollution forecasting for near future are remarkably important for all living creatures today. After years of the almost accurate weather forecast, it has been possible to work on the almost accurate forecast of air pollution for the near future. Dust transportation is the one of the biggest concern in air pollution forecasting. The dust transportation from the source regions as North&South Africa and the Arabian Peninsula increases the dust amount in the target area with the help of southern flow to the area and moving pressure centers in Mediterranean region. Prediction for dust events like this event can provide taking prevention for the socio-economic results like public health issues. WRF-Chem model for air pollution forecasting is the one succesful model of atmospheric models & systems for air quality forecasting. In this study, time interval is five days, GFS data sets are used for WRF-Chem. Mud precipitation in Istanbul on 26.01.2019 and the sudden rise of $PM_{2.5}$ & PM_{10} on the same day were modelled, the estimated data of this event and actual station data were compared for consistency and error percentages were calculated. In this study, it is aimed to show how effective WRF-Chem can be for air pollution estimation for the future.

MetMed

Sensitivity of WRF Parameterizations on Lightning Events in Istanbul

İ. Kurşun, S. Güneylik, C. Düzgün, R. Öztürk, İ. Kelkitli, Y. Ürkmez, and N. Ekinci

Meteorological Engineering Department, Istanbul Technical University, Istanbul, Turkey

14:00 – **Air Pollution Prediction in Istanbul by using WRF-CHEM**; **Umur Dinç**, Baha Toker, Zeynep Feriha Ünal,İlayda Kurşun, Cansu Düzgün,Gamze Deniz, Hüseyin Toros

Thank you for listening!

You can ask anything without hesitating!

FOR YOUR ALL QUESTIONS

Social Media Accounts

twitter.com/itumodelleme

instagram.com/itumodelleme

Web Address & Gmail

www.modelleme.itu.edu.tr

itumodellemetakimi@gmail.com