

Hong Kong Observatory Summer Placement Programme 2024

Project Number	Project Title	Job description	Subject and year of study required	Specific knowledge / skills required / remarks
F3a	Development of Probability of Precipitation (PoP) guidance using Ensemble Prediction System (EPS) products	<p>(i) Enhance PoP guidance for different rainfall categories based on calibrating EPS forecast data with increased spatial resolution and extended forecast period.</p> <p>(ii) Conduct verification and compare the performance of different PoP algorithms against rainfall observations for various seasons and selected cases.</p>	<p>Meteorology, Earth System Science, Physics, Mathematics, Statistics, Computer Science, or related disciplines.</p> <p>Completion of 2nd year of study</p>	<ul style="list-style-type: none"> - Knowledge in programming using Python libraries for data science. - Interest in meteorology or numerical weather prediction is preferred.

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F3b	Development of machine learning model for point-based quantitative precipitation estimation (QPE)	<p>(i) Develop a machine learning (ML) model for location specific QPE based on time series of radar imageries and rain gauge observations.</p> <p>(ii) Conduct verification and review performance of ML algorithm against existing operational method.</p>	<p>Meteorology, Physics, Earth System Science, Mathematics, Statistics, Computer Science or related disciplines.</p> <p>Completion of 2nd year of study.</p>	<ul style="list-style-type: none"> - Knowledge in data processing, applications of Python libraries for data science and machine learning. - Interest in meteorology and application of weather radar data.
F4	Enhancement of the data quality assurance system for global surface observations	Study and formulate systematic algorithms for checking the data quality of surface observations received from other meteorological services	<p>Meteorology, Physics, Earth System Science, Mathematics, Statistics, Computer Science or related disciplines.</p> <p>Completion of 2nd year of study.</p>	<ul style="list-style-type: none"> - Knowledge in meteorology. - Knowledge and computing skills including Linux & SQL database. - Experience in using Python/R programming language and statistical analysis would be an advantage.

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A2	Estimating turbulence intensity using commercial flight data	Study and develop algorithms to calculate Eddy Dissipation Rate (EDR) using data recorded onboard of commercial aircraft for assessing potential impact of turbulence on aircraft.	Physics, Earth System Science, Mathematics, Statistics, Computer Science or related disciplines. Completion of 2 nd year of study.	<ul style="list-style-type: none"> - Knowledge in time series data processing including spectral analysis, and experience with Python. - Interest in meteorology and aviation.
A6a	Development of consolidated turbulence forecast product for aviation application	Develop and evaluate a consolidated turbulence forecast product utilizing the suite of turbulence forecast products currently available, including turbulence nowcast, numerical weather prediction (NWP) outputs, AI turbulence model, etc. The student would be able to perform data analytics and work with high performance computing in the project.	Physics, Earth System Science, Mathematics, Data Science, Computer Science or related disciplines. Completion of 2 nd year of study.	<ul style="list-style-type: none"> - Interest in meteorology and aviation. - Knowledge and experience in using Python programming and performing statistical analysis would be an advantage.

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A6b	Enhancement of thunderstorm probability forecast for aviation using deterministic and ensemble forecasts from numerical weather prediction models	Explore ways to produce thunderstorm probability forecast, which would be useful for flight planning and air traffic management. Perform evaluation for different probability forecasts and conclude the best way to produce thunderstorm probability forecast.	Computer Science, Mathematics, Physics, Earth System Science or related disciplines. Completion of 2 nd year of study.	<ul style="list-style-type: none"> - Knowledge in Python, C++ or parallel programming would be an advantage. - Interest in meteorology, aviation and/or data science.

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D4	Production of educational and promotional videos for HKO	Assist in the production of educational and/or promotional videos for HKO, including screenwriting, filming and post-production. The videos may be broadcast on local TV channels (as part of “Cool Met Stuff” series), and/or uploaded to HKO social media platforms including YouTube, Facebook and Instagram.	<p>Film and television, creative media, multimedia technology, animation or other related disciplines with an emphasis in digital video production.</p> <p>Completion of 2nd or 3rd year of study.</p>	<p>Strong knowledge in (A) digital video production and editing software (e.g. Adobe Premiere),</p> <p><u>OR</u></p> <p>(B) animation production and software (e.g. Adobe Illustrator, After Effects).</p> <p>Strong skills in both (A) and (B) above will be an advantage.</p> <p><u>Applicant must submit a portfolio of previous work.</u></p> <p>Please specify your role involved in each of the videos submitted.</p>

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R2	Analysis of ambient radiation data collected at the community level in Hong Kong under the School Community Ambient Radiation Measurement Programme	The School Community Ambient Radiation Measurement Programme has been launched since 2021 to collect gamma radiation and meteorological data at the community level. This study is to analyse the distribution of ambient radiation levels and to understand the correlation of ambient radiation levels with various factors, such as weather situations, geology, etc. in Hong Kong.	Physics, Earth System Science, Mathematics, Statistics or related disciplines. Completion of 2 nd year of study.	- Knowledge in data management and skills in the use of statistical analysis tools.