

국외 출장 결과보고서

결 재	담당자	팀장	실장	사업단장
	11월 23일	11월 29일	11월 29일	11월 29일
	고은별	Adam Clayton	권인혁	이우진

1. 출장개요

출장목적	9th International Symposium on Data Assimiation (ISDA) 참석 및 발표		
출장일정	2023. 10. 14. ~ 2023. 10. 23. (8박 10일)		
성명		소속	직급(직위)
Adam Clayton		동화기법팀	책임급연구원(팀장)
방문기관 (또는 회의장소)	볼로냐 컨퍼런스 센터 (Palazzo dei Congressi Bologna, Italy)		
출발지	인천	도착지	볼로냐

2. 업무수행내용

가. 출장 배경 및 목적

- o The 9th International Symposium on Data Assimilation (ISDA 2023) was held in Bologna, Italy, 16–20 October 2023. The ISDA meeting has become the most important annual meeting for general data assimilation (DA) issues, so it was important for KIAPS to send a representative. (There were no other representatives from KIAPS or KMA – just four Korean researchers who are currently based outside Korea.) In total, around 230 researchers joined the meeting, including many representatives from the main NWP centers in Europe. Thus, I was able to catch up with many people I already knew, such as my former colleagues from the UK Met Office, and I also met several researchers who I previously only knew through their papers, and had never met personally.

나. 주요 업무 수행 사항

- o Adam Clayton
 - I presented a poster entitled “Development of existing and future DA systems at KIAPS”, which enabled me to introduce KIAPS and the work of the KIAPS DA group to a number of researchers who were previously unfamiliar with KIAPS. The conference sessions were broken down into four main topics: (1) Methods and Applications; (2) DA for convection,

high-resolution models, and storms; (3) DA and machine learning; and (4) Novel mathematical ideas in DA. All sessions included talks that were highly relevant to our work at KIAPS, as summarized in my main report. My report also includes some information gathered from conversations during the social sessions.

3. 출장성과 · 시사점 및 향후 업무 활용 계획

가. 출장성과 · 시사점

o Adam Clayton

- Jean-Francois Caron presented the latest results from ECCO's work on Scale-Dependent Localization (SDL), which will be useful for my corresponding work at KIAPS. He also gave me information and links for ECCO's "MIDAS" DA software, which is now open to the public – a useful reference for our DA software systems.
- There were also a number of talks on how to introduce rapid-update cycling into the NWP suite, and optimize the ensemble performance – topics which are highly relevant to our system design work.
- Bruce Ingleby gave helpful advice on the use of Mode-S data and near-surface observations, which will influence our work in 2024.
- The Machine-Learning talks were of particular interest – bringing me up-to-date with the rapid developments that are now taking place in this area. Currently we have only two DA group members working on ML techniques, focused mainly on observation QC, bias correction, and impacts. The conference introduced several other areas where ML methods are now giving clear benefits, such as for model bias correction and modelling of observation operators.
- By introducing the KIAPS DA group to further members of the international research community, I hope to have increased our chances of recruiting suitable specialists from outside Korea.
- Other outcomes of particular interest to KIAPS are summarized in my main conference report.

나. 향후 업무 활용 계획

o Adam Clayton

- The information I gained on localization techniques will help in my development of SDL.
- Through my conversations with Bruce Ingleby, I realised that we need to test the impact of near-surface observations in the KIM NWP system. Given the problems involved in assimilating such data, and the known weaknesses in our own system, it is likely that assimilation of such data is degrading forecast performance in some areas.
- We should keep an eye on which ML techniques are giving the most benefit for DA, and see what areas we should prioritize at KIAPS.