

TRAVEL REPORT FORM

출장보고서

결 재	사원	원장		
	01/24 오수진	01/24 권원태		
협 조				

I. Travel Overview 출장개요

1. Traveler(s) 출장자

Department 소속	Position 직위(직급)	Name 성명	Note 비고
원장실	원장	권원태	-

2. Travel Period 출장기간

- 출장기간 : 2019년 1월 6일(일) ~ 2019년 1월 13일(일)

3. Occasion and destination 행사 및 출장지

- 행 사 명 : IPCC 제1실무그룹 6차 평가보고서 2차 주저자회의
(The Second Lead Author Meeting of the IPCC Working Group I Sixth Assessment Report)
- 출 장 지 : 캐나다 밴쿠버

II. Major Activities 주요업무 수행내용

1. Main Contents and Activities 주요내용 및 활동

(1) 국외출장 배경 및 목적

- 정부간기후변화협약체(IPCC) 제1실무그룹(WGI)에서 6차 평가보고서(AR6) 작성을 위한 제2차 주저자회의(LAM2) 개최(제1차 주저자회의는 중국 광저우에서 2018년 6월에 개최되었음)
- WGI AR6의 Outline은 2017년 캐나다 몬트리올에서 개최된 IPCC 46차 총회에서 승인됨
- 각 실무그룹별 저자와 검토자는 2018년 2월 결정됨
 - 대한민국은 총 5인 참여 : 윤진호(GIST, 아틀라스), 안진호(서울대, 2장), 민승기(포스텍, 3장), 이준이(부산대, 4장 CLA), 권원태(APCC, 10장)
- 세부일정

날짜	출발지	도착지	업무 수행 내용
1.6.(일)	인천	밴쿠버	인천 ▷ 밴쿠버 이동
1.7.(월) ~ 1.11.(금)	밴쿠버		Chapter 10 주저자회의 등 참석 및 논의
1.12.(토) ~ 1.13.(일)	밴쿠버	인천	밴쿠버 ▷ 인천 이동

(2) 행사 및 회의 주요 내용

○ 회의는 총회(Plenary meeting)와 각 장별 회의(Chapter meeting)로 구성됨

- 1일차: 개요 및 각 장별 주요 의제 및 미포함 전문 분야 논의
- 2일차: 각 장별 구조 초안 작성 및 연계 주제
- 3일차: 연계주제 추진 방안 및 저자별 업무 분장
- 4일차: 주요 메시지 및 FAQ, 내부 초안 검토를 위한 전문가 추천
- 5일차: 내부 초안 작성을 위한 계획 완료

○ WGI 집필진 구성

- CLA, LA & RE : 총 230명(63개국)
- 여성 27%, 개발도상국 출신 42%, 기존 미참여자 61% 로 구성
- 유럽 39%, 아시아 20%, 북미 14%, 아프리카 11%, 남미 8%, 남서태평양 8% 로 구성
- 주요 국가별 구성 : 미국 23명, 영국 21명, 독일 14명, 프랑스 10명, 호주 11명, 중국 14명, 일본 10명, 인도 7명
- * 검토편집자(RE)는 3차 주저자 회의 이후 참석
- * 미국 정부 Shut down으로 국가연구기관소속 집필진 참석 저조

○ 보고서 구성

- 서론: 1장 Framing, Context, Methods
- 대규모 기후 변화(Large-scale climate change)
 - 2장: 기후시스템의 변화(Changing state of the climate system)
 - 3장: 기후시스템에 미치는 인위적 변화(Human influence on the climate system)
 - 4장: 미래 기후변화-시나리오 기반 전망과 중기 정보(Future global climate:scenario-based projections and near-term information)
- 기후과정(Climate processes) : WGIII과 연계
 - 5장: 전지구 탄소와 생지화학 과정 및 피드백(Global carbon and other biogeochemical cycles and feedbacks)
 - 6장: 단기 기후 동인(Short-lived climate forcers)
 - 7장: 지구 에너지 수지, 기후 피드백과 기후민감도(The Earth's energy budget, climate feedbacks and climate sensitivity)
 - 8장: 물순환 변화(Water cycle changes)
 - 9장: 해양, 빙권 및 해수면 변화(Ocean, cryosphere, and sea level change)
- 지역기후정보(Regional climate information) : WGIII과 연계
 - 10장: 전지구와 지역 기후 연계(Linking global to regional climate change)
 - 11장: 변화하는 기후에서 날씨와 기후 극한현상(Weather and climate extreme events in a changing climate)
 - 12장: 지역 영향과 위험 평가를 위한 기후변화정보(Climate change information for regional impact and for risk assessment)

- 아틀라스(Regional Atlas)

- LAM2 회의 목적

- 각 장의 내용 구성 및 업무 분장
- 초초안(Zero-order Draft) 내부 검토 의견 반영한 초안(First-order Draft) 작성 방향 논의
- 연계 주제 확인 및 추진 방안 확립
- 주요메세지 관련 검토
- 그림, 사례연구 및 박스 관련 사항 논의
- FAQ 주제 선정
- 내부 검토를 위한 전문가 검토 그룹 제안 등

- 연계주제 토의(BOG 회의)

- BOG1: 기준년도 및 지구 평균 기온의 정의
- BOG2: 중간 규모 기후 이슈
- BOG3: 모델 관련 이슈
- BOG4: 불확실성과 피드백, 급격한 변화
- BOG5: 지역 기후 관련 이슈
- BOG6: 관측
- BOG7: 탐지 및 원인 규명
- BOG8: 복사 강제력을 포함하는 기후 메트릭스
- BOG9: 고기후
- BOG10: 재분석 자료

- Chapter 10 논의 내용

- Chapter 10 : 전 지구와 지역 기후 변화의 연계(Linking global to regional climate change)
- 5일간의 집중 토론을 통해 목차 및 저자별 업무 분담
 - 지역 현상, 동인, 피드백 및 원격상관
 - 지역 규모 관측 및 재분석
 - 지역 규모에서 원인 규명을 포함한 내부변동성과 강제변화의 상호작용
 - 모델 개선, 상세화를 포함한 방법론, 편이조정 및 지역 특수성 평가
 - 불확실성 정량화를 포함한 지역기후정보의 신뢰도
 - 도시, 산악, 연안, 유역, 소규모도서 등 규모별 방법론
 - 다양한 증거에서 정보통합 접근법
 - FAQs

- 세부 내용은 외부에 유출하는 것을 금지하여 보고에 제한이 있음

2. Relevance to APEC Climate Center's Activities 결론 및 소감

(1) 향후 일정

- 2019.4~2019.6: AR6 초안(FOD) 작성 완료 및 전문가 검토
- 2019.8: LAM3 Meeting(프랑스)
- 2020.1: AR6 2차원고(SOD) 작성 완료
- 2020.3~2020.4: 전문가 및 정부 검토
- 2020.6: LAM4 Meeting(미정)
- 2020.10: 최종원고(FGD) 작성 완료
- 2020.12~2021.1: 각 회원국 정부 최종 배포
- 2021.4: IPCC 54차 총회 승인 예정

(2) 행사 결론 및 소감

- 특히 10장은 APCC의 업무인 기후정보서비스와 관련이 크므로 향후 원고 작성 과정에 연구 성과가 반영될 수 있도록 추진이 필요함
- 관련 전문가와 정부 및 관련 기관에서는 충분한 검토를 거쳐 과학적 의견이 반영될 수 있도록 만반의 준비가 필요할 것으로 사료됨
- 국문으로 작성된 논문이나 연구보고서의 경우 규정상 참고문헌으로 사용할 수 있으나, 외국 저자들의 경우 내용을 파악할 수 없다는 이유로 활용에 제약이 있으므로 영요약문, 그림 및 표를 영문으로 작성하는 것이 필수적임
- 4월 7일까지 초안(FOD)가 작성 완료되어야하므로 일정이 매우 촉박함

3. Suggestions and Remarks 건의사항

없음

III. References (Presented and Collected Materials) 주요 수집자료

(with attachment of any information or report in case of attendance of conferences, workshops and meetings) 학술대회, 워크숍, 회의 등 참석 시 관련 정보 및 문서 첨부

붙임1. IPCC AR6 WGI Outline 1부

붙임2. IPCC AR6 Schedule 1부. 끝.

IPCC AR6 WGI SCHEDULE (19 July 2018)

2018

JUNE	25-29 June First Lead Author Meeting (LAM1)
OCT	14 October Submission of the Internal Draft to the TSU 15-28 October TSU compile Internal Draft 29 October - 25 November Internal Review of the Internal Draft
DEC	3 December TSU sends compiled Review Comments to CLAs
JAN	7-12 January Second Lead Author Meeting (LAM2)
APRIL	7 April Submission of the First Order Draft (FOD) to TSU 8-21 April TSU compiles FOD 29 April - 23 June Expert Review of FOD
JULY	1 July TSU sends compiled Review Comments to CLAs
AUG	26-31 August Third Lead Author Meeting (LAM3)
OCT	7 October Comment responses & RE First interim report due to TSU
DEC	31 December <i>Literature submission cut off</i>

2019

2020

JAN	12 January Submission of the Second Order Draft (SOD) to TSU 13-26 January TSU compile SOD
MAR	2 March - 26 April Expert and Government Review of the SOD and of the FOD of the Summary for Policy Makers (SPM)
MAY	4 May TSU send compiled Review Comments to CLAs
JUNE	1-6 June Fourth Lead Author Meeting (LAM4) 29 June RE second Interim report due to TSU
JULY	27 July SOD Review Comments response due to TSU
SEPT	30 September <i>Literature acceptance cut off</i>
OCT	18 October Submission of the Final Draft (FGD) to TSU 19 October - 1 November TSU compiles FGD
DEC	7 December - 31 January Final Government Distribution
FEB	8 February TSU send compiled Review Comments to SPM Drafting Team

2021

APR	12-16 April IPCC 54 - Approval Session
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FORTY-SIXTH SESSION OF THE IPCC
Montreal, Canada, 6 – 10 September 2017

(10.IX.2017)
Agenda Item: 7
ENGLISH ONLY

DECISION

**CHAPTER OUTLINE OF THE WORKING GROUP I CONTRIBUTION
TO THE IPCC SIXTH ASSESSMENT REPORT (AR6)**

As Adopted by the Panel at the 46th Session of the IPCC

Disclaimer
Posted as adopted subject to copy editing

CHAPTER OUTLINE OF THE WORKING GROUP I CONTRIBUTION TO THE IPCC SIXTH ASSESSMENT REPORT (AR6)

The Intergovernmental Panel on Climate Change decides:

(1) to agree to the outline of the *Working Group I contribution to the IPCC Sixth Assessment Report* as contained in Annex 1 to this document.

(2) that this report assesses relevant literature, especially since the Fifth Assessment Report (AR5), in a manner consistent with the IPCC guidance on the use of literature.

(3) that the bulleted text in Annex 1 to this Decision, that resulted from the scoping process and refined through comments by the Plenary, be considered by authors as indicative.

(4) to invite the Co-Chairs of Working Group I and the Co-Chairs of WGII and WGIII to develop appropriate mechanisms to ensure the effective co-ordination of Working Group contributions to the IPCC Sixth Assessment Report, to oversee the treatment of cross-cutting themes, and to prepare a Glossary common to Working Groups I, II and III.

(5) In order to achieve this, the timetable for the production of the IPCC Working Group I contribution to IPCC Sixth Assessment Report is as follows:

15 September – 27 October 2017	Call for author nominations
29 January – 4 February 2018	Decision on Selection of authors
25 June – 1 July 2018	First Lead Author Meeting
7 – 13 January 2019	Second Lead Author Meeting
29 April – 23 June 2019	Expert Review of the First Order Draft
26 August – 1 September 2019	Third Lead Author Meeting
2 March – 26 April 2020	Expert and Government Review of the Second Order Draft
1 – 7 June 2020	Fourth Lead Author Meeting
7 December 2020 – 31 January 2021	Final Government Distribution of the Final Draft and Final Government Review of the Summary for Policy Makers
12 – 18 April 2021	Submission to the WGI Session for approval of the Summary for Policymakers and acceptance of the underlying Report

(6) that the budget for the production of the Working Group contribution to the IPCC Sixth Assessment Report is as contained in Decision (IPCC/XLVI-1) on the IPCC Trust Fund Programme and Budget.

Chapter outline of the Working Group I contribution to the IPCC Sixth Assessment Report (AR6)

Summary for Policy Makers

Technical Summary

Chapter 1:

Framing, context, methods

Executive Summary

- Synthesis of key findings from AR5 and earlier assessment reports, and connections to AR6 Special Reports
- Framing of the physical science information relevant for mitigation, adaptation, and risk assessment in the context of the Global Stocktake
- Assessment approach
- Observational and reanalysis developments since the AR5
- Model and experimental design developments since the AR5
- Emissions and forcing scenarios
- Treatment and evaluation of uncertainty throughout the report

Frequently Asked Questions

Chapter 2:

Changing state of the climate system

Executive Summary

- Multi-millennial context, pre-industrial to present day
- Natural and anthropogenic forcings
- Radiative forcing
- Large-scale indicators of observed change in the atmosphere, ocean, cryosphere, land, and biosphere
- Modes of variability

Frequently Asked Questions

Chapter 3:

Human influence on the climate system

Executive Summary

- Overview of model performance and development since the AR5
- Simulated large-scale indicators of change in the atmosphere, ocean, cryosphere, land, and biosphere
- Simulated modes of variability
- Natural variability versus anthropogenically-forced change
- Attribution of large-scale observed changes

Frequently Asked Questions

Chapter 4:

Future global climate: scenario-based projections and near-term information

Executive Summary

- Projections of global mean surface temperature and other key global indicators
- Evaluation of multi-model ensemble methods
- Large scale patterns of climate change
- Committed climate response, climate targets, overshoot, irreversibility, abrupt change
- Climate response to greenhouse gas removal scenarios
- Climate response to solar radiation management scenarios
- Interplay between internal variability and response to forcings, including short-lived forcings
- Variability and unexpected changes of global mean surface temperature
- Near-term predictability, sources and capabilities
- Synthesis of climate information in the near-term

Frequently Asked Questions

Chapter 5:

Global carbon and other biogeochemical cycles and feedbacks

Executive Summary

- Feedbacks between climate and biogeochemical cycles, including paleoclimate information
- Ocean acidification
- Historical trends and variability of CO₂, CH₄ and N₂O; sources and sinks
- Projections of global biogeochemical cycles from near-term to long-term
- Abrupt change, irreversibility
- Model evaluation, emergent constraints
- Transient climate response to cumulative emissions and remaining carbon budgets for climate targets
- Biogeochemical implications of land and coastal management mitigation options and greenhouse gas removal
- Biogeochemical implications of solar radiation management scenarios

Frequently Asked Questions

Chapter 6:

Short-lived climate forcings

Executive Summary

- Key emissions: global overview, natural, anthropogenic, historical and scenarios
- Observed and reconstructed concentrations and radiative forcing
- Direct and indirect-aerosol forcing
- Implications for greenhouse gas lifetimes
- Implications of different socio-economic and emission pathways, including urbanisation, for radiative forcing
- Connections to air quality and atmospheric composition

Frequently Asked Questions

Chapter 7:

The Earth's energy budget, climate feedbacks, and climate sensitivity

Executive Summary

- Energy budget and its changes through time
- Radiative forcing: definitions, estimates, and its representation in models
- Climate feedbacks
- Sensitivity of the climate system: methods and uncertainty
- Empirical constraints on the sensitivity of the climate system, including paleoclimate
- Global warming potential, global temperature change potential, and other metrics

Frequently Asked Questions

Chapter 8:

Water cycle changes

Executive Summary

- Observations, models, methods and their reliability
- Past, present and projected changes, trends, variability and feedbacks in the physical components of the water cycle
- Circulation, processes and phenomena (e.g. monsoon systems) affecting moisture and precipitation patterns, including extremes
- Cloud-aerosol processes affecting the water cycle
- Changes in seasonality of natural storage and water availability
- Abrupt change
- Confidence in projections

Frequently Asked Questions

Chapter 9:

Ocean, cryosphere, and sea level change

Executive Summary

- Past and future changes in ocean circulation and properties (trends, variability and extremes)
- Past and future changes in marine and terrestrial cryosphere
- Evaluation of models and projection methods
- Detection and attribution
- Past global and regional sea level changes
- Projections of global and regional sea level change
- Abrupt change and long-term commitment
- Extreme water levels (tides, surge and ocean waves)

Frequently Asked Questions

Chapter 10:

Linking global to regional climate change

Executive Summary

- Regional phenomena, drivers, feedbacks and teleconnections
- Regional scale observations and reanalyses
- Interplay between internal variability and forced change at the regional scale, including attribution
- Evaluation of model improvements, methods, including downscaling and bias adjustment and regional specificities
- Confidence in regional climate information, including quantification of uncertainties
- Scale specific methodologies e.g. urban, mountains, coastal, catchments, small islands
- Approaches to synthesizing information from multiple lines of evidence

Frequently Asked Questions

Chapter 11:

Weather and climate extreme events in a changing climate

Executive Summary

- Extreme types, encompassing weather and climate timescales and compound events (including droughts, tropical cyclones)
- Observations for extremes and their limitations, including paleo
- Mechanisms, drivers and feedbacks leading to extremes
- Ability of models to simulate extremes and related processes
- Attribution of changes in extremes and extreme events
- Assessment of projected changes of extremes and potential surprises
- Case studies across timescales

Frequently Asked Questions

Chapter 12:

Climate change information for regional impact and for risk assessment

Executive Summary

- Framing: physical climate system and hazards
- Region-specific integration of information, including confidence
- Information (quantitative and qualitative) on changing hazards: present day, near term and long term
- Region-specific methodologies
- Relationship between changing hazards, global mean temperature change, scenarios and emissions

Frequently Asked Questions

ANNEXES

Options for cross-WG integration including Regional Atlas

Cross Working Group Glossary

Technical Annexes

List of Acronyms

List of Contributors

List of Reviewers

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