



Department of Earth and Environmental Sciences Fall 2025 GLG 201 – The Dynamic Earth  
Prof. Seth Jacobson

## Team Contract Template

Team Name
Group 21
Team Members
Mohamed Alkhyeli
Brixton Rose
Marc P
Kyle Boot

All team members must agree to the contract and sign at the end. Successful teams establish goals and expectations and clearly define and take responsibility for specific tasks.

Our presentation topic will be:

Renewable Energy: Earth's Role in Sustainable Power Generation

This project is worth 10% of the grade for this course. Our goal is to achieve the following grade on the team project (select 1):

- 50% to 60%
- 60% to 70%
- 70% to 80%
- 80% to 90%
- 90% to 100%

These are the terms of group conduct and cooperation that we agree on as a team.

**Communication:**

*Include method of communication, e.g. email, face-to-face; frequency of messaging or meetings; what times are appropriate or not appropriate for project communication; who will initiate or lead communication or meetings; consequences for not responding to communication or not attending meetings.*

We agree to...

Use Group iMessage/WhatsApp for daily quick communication and email for longer updates.

Meet once per week in person (after class) and schedule extra meetings if needed before deadlines.

Respond to messages within 24 hours unless otherwise stated.

Respect quiet hours (no messages after 10 PM).

Rotate meeting facilitators so one member is responsible each week for keeping discussion on track.

**Conduct and conflict resolution:**

*What does respectful teamwork look like to you? Are team meetings strictly focused on completing the team project, or is there time for working together on labs or taking breaks? How should those who are struggling communicate that they need assistance? How should team members help each other? How should conflict between team members be resolved?*

We agree to...

Treat all members respectfully, valuing everyone's contributions.

Keep meetings focused on the project, but allow short breaks for casual conversation.

Be supportive: if a member struggles, they should inform the group early so assistance can be provided.

Share resources (articles, data, slides) so no one is left behind.

Resolve disagreements by majority vote after open discussion. If conflict cannot be resolved, the group will ask the professor to mediate

Hold each other accountable for deadlines and remind each other politely if work is overdue.

**Teamwork skills:**

*Consider skills needed for this project such as leadership, organization, research, graphic design, writing. What are team members' strengths? What skills would team members like to develop? How will team members develop teamwork skills?*

We agree to...

Mohamed – Research & Writing



Brixton – Graphic Design & Organization

Marc – Presentation Skills & Communication

Kyle – Data Analysis & Visuals

Develop new skills: each member will rotate tasks (e.g., everyone contributes to research, slide design, and speaking parts). Share constructive feedback after each milestone to improve collaboration. Keep all project files organized in a shared Google Drive folder.

I agree to this contract and will be accountable for the success of this team.

Team Member's Name	Team Member's Signature
Mohamed Alkhyeli	
Brixton Rose	
Marc P	Marc Petrucci
Kyle Boot	Kyle Boot

Mohamed Alkhyeli

Instructor Name

ISB 201, Section 004

3 December 2025

### **How Climate Change Affects Abu Dhabi, United Arab Emirates**

I selected Abu Dhabi, UAE, because it is my birthplace and holds personal significance. Abu Dhabi sits directly on the Arabian Gulf, and most of its population and infrastructure lie at or near sea level. This makes the city extremely vulnerable to climate-driven changes in temperature, precipitation, sea level, and natural hazards. According to the Environment Agency–Abu Dhabi, rising temperatures, shifting rainfall patterns, and sea-level rise pose serious long-term risks to the Emirate (Environment Agency–Abu Dhabi, Climate Change Strategy).

#### **Precipitation: Past and Projected Changes**

Abu Dhabi receives less than 100 mm of precipitation annually, typical of a dry desert climate. Recent studies show rainfall patterns becoming more unpredictable, with extended droughts followed by intense storms (Government of UAE, Climate Change in the UAE). In April 2024, Al Ain recorded about 254 mm of rain within 24 hours—the highest total in 75 years—resulting in widespread flash flooding (Khaleej Times, “UAE: Number of Stormy Days Has Increased”).

#### **Short Term (Next 50 Years):**

Climate models project that although annual rainfall totals may remain low, individual storms will become more powerful because warmer air holds more moisture (Climate Analytics, “Heavy Precipitation Threat”). This increases the likelihood of severe flash floods, especially since Abu Dhabi’s landscape lacks natural drainage.

#### **Long Term (50–100 Years):**

By the end of the century, rainfall is expected to become even more variable, with longer drought periods and stronger storm events (Government of UAE, Climate Change in the UAE). Such variability will place additional stress on infrastructure, water supplies, and public safety.

## Temperature: Past and Projected Changes

The UAE is one of the hottest regions in the world, and temperatures have steadily increased, producing more extreme heat days and stronger summer heat waves (Meteoblue, Climate Change Abu Dhabi). World Bank climate projections confirm that warming will continue throughout this century.

### Short Term (Next 50 Years):

Average temperatures in Abu Dhabi are expected to rise by 1.5–2.5°C, leading to many more days reaching 40–45°C, especially when humidity intensifies the heat index along the coast (World Bank, Climate Change Knowledge Portal).

### Long Term (50–100 Years):

By 2100, the Middle East is projected to experience some of the most dangerous heat stress conditions globally. Abu Dhabi will likely face longer heat waves, hotter nights, and increased strain on electricity demand and outdoor workers (Government of UAE, Climate Change in the UAE).

## Sea-Level Rise

Sea-level rise is a major concern because 85% of Abu Dhabi's population and 90% of its infrastructure are located along the coast (Environment Agency–Abu Dhabi, Climate Change Strategy). Projections estimate a rise of 0.5–0.65 m by 2100. Even a 0.5 m increase could inundate 1.46% of developed land, while a 1.5 m rise could flood approximately 9.45%, impacting neighborhoods, roads, and coastal facilities (Earth.org, "Sea Level Rise Risk for Abu Dhabi"). Additional risks include saltwater intrusion into groundwater and accelerated coastal erosion (Government of UAE, Climate Change in the UAE).

## Natural Hazards: Flooding, Storms, Heat, and Drought

Climate change intensifies several natural hazards that affect Abu Dhabi:

- Extreme Heat: Longer, hotter heat waves pose risks to public health, energy systems, and outdoor laborers (Government of UAE, Climate Change in the UAE).
- Storms & Flash Floods: Storm frequency has increased since 2000, demonstrated by the historic 2024 rainfall event (Khaleej Times, "UAE: Number of Stormy Days Has Increased").

- Drought & Water Stress: Higher temperatures increase evaporation, worsening water scarcity in an already arid region (Government of UAE, Climate Change in the UAE).
- Coastal Hazards: Rising seas and stronger storm surges threaten beaches, mangroves, ports, and shoreline infrastructure (Environment Agency–Abu Dhabi, Climate Change Strategy).

### Adaptation Strategy: Mangroves and Climate-Resilient Planning

A key adaptation strategy is the expansion and restoration of mangrove forests combined with climate-resilient urban planning. The Abu Dhabi Climate Change Strategy highlights mangroves as a nature-based solution that reduces wave energy, stabilizes sediment, protects against storm surges, and stores carbon—helping cool coastal environments (Environment Agency–Abu Dhabi, Climate Change Strategy). Mangroves also support biodiversity and strengthen coastal ecosystems. Additional adaptation measures include stricter zoning for high-risk areas, improved drainage systems, and reinforcement of critical infrastructure to increase the city's resilience.

### Works Cited

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