UCAM Field visit November 2025

UCAM Staffing: EB - Eustace Barnes, JF – John Forrest, HL – Hugo Lepage, DR – Daria Radu, ML - Miguel Lezama, JP - Julia Porturas.

Fieldwork plans for each of the visiting research staff.

Green = Biodiversity / Bioacoustics.

Brown = Soils.

Orange = Dry Forest.

Blue = Water & sediments.

Purple = UNAH Conference.

Red = arrivals.

General Objectives for the Upcoming Field Visit

1. Evaluate ongoing biodiversity data collection efforts, ensuring consistency and methodological accuracy across sampling sites. The visit will include field verification of species records, refinement of survey protocols, and mentoring of students involved in ecological monitoring activities.
2. Strengthen the application of remote sensing and GIS techniques for analyzing vegetation dynamics, including the processing of satellite imagery to assess land cover changes, vegetation indices, and seasonal patterns across the study areas, and assisting students with related interests.
3. Conduct comprehensive water quality and sample collection campaigns, covering key sites within the monitoring network to obtain updated data on physicochemical parameters, sediment characteristics, and related environmental indicators. Assist students with specific interests in hydrological studies.
4. Deliver conference presentations and thematic talks at UNAH, sharing recent findings, methodological advancements, and collaborative progress in biodiversity and environmental monitoring.
5. Initiate the transitionary handover phase, establishing clear frameworks for data management, local capacity building, and continuity of monitoring and research activities under UNAH leadership.

Group 1: Biodiversity. EB, ML.

Objective: to survey biodiversity is to document and assess the unique species composition and ecological dynamics within isolated and understudied ecosystems. Due to their complex topography and climatic variation, inter-Andean valleys often harbour high levels of endemism and distinct biotic communities. Conducting field surveys in these areas helps identify conservation priorities, detect potential new or range-restricted species, and understand biogeographic patterns critical for informing sustainable land management and biodiversity protection strategies.

1. **Biodiversity survey design and sampling in dry forests**, focusing on standard methods for quantifying plant and animal diversity. Students will learn how to establish transects and plots, apply standardized sampling protocols for flora and fauna, and manage field data collection to ensure comparability and scientific rigor.

2. **Species identification and ecological monitoring**, emphasizing key taxonomic groups characteristic of dry forest ecosystems. Participants will practice identifying indicator species, assessing habitat condition, and using field guides and digital tools for biodiversity recording and database entry.

3. **Conservation assessment and ecosystem evaluation**, integrating ecological data to understand habitat health, anthropogenic pressures, and conservation priorities. Students will discuss drivers of degradation, analyze spatial data, and explore management approaches for the sustainable protection of Peru's threatened dry forest ecosystems.

We intend to follow the "Cambridge visit" format, where we run morning or afternoon sessions to preselected study sites with small groups of interested students. Followed by students working, while we are present to help out.

5th November. Arrive Huanta. EB, ML.

6th November. Biodiversity, Dry forest. EB, ML.

7th November. Biodiversity, Dry forest. EB, ML + UNAH staff & students.

8th November. Biodiversity, Dry forest. EB, ML + UNAH staff & students.

9th November. Biodiversity, Dry forest. EB, ML + UNAH staff & students.

10th November. Biodiversity, Dry forest. EB, ML + UNAH staff & students.

11th November. Biodiversity, Dry forest. EB, ML + UNAH staff & students.

12th November. UNAH Conference. Biodiversity, time permitting. EB, ML.

13th November. UNAH Conference. Biodiversity, time permitting. EB, ML.

14th November. UNAH Conference. Biodiversity, time permitting. EB, ML.

15th November. Fly Lima. EB. (ML & vehicle 1 returns to Cusco).

16th November. EB flight to UK.

Group 2: Data analytics. HL, DR.

Satellite data analysis workshop. HL, DR + UNAH staff & students.

Objectives: to provide a clear framework for understanding the spatial and temporal variability of terrestrial ecosystems. This involves processing and interpreting multispectral and hyperspectral imagery to derive key biophysical indicators—such as vegetation indices (e.g., NDVI, EVI), soil moisture estimates, and land surface temperature—that reflect ecological conditions and land-use changes.

1. **Soil classification, monitoring land use and land cover changes** using remote sensing techniques. Monitoring crop types and vegetation indices over crops of interest in the Huanta area.
2. **Bofedales health classification**, visualising degraded bofedales all across Peru. Discussion the cause of degradation and starting statistical and time series analyses for country-wide patterns.,
3. **Vegetation dynamics**, investigating greening and browning patterns around the Huanta area and more generally in the high Andes. Correlating the greening/browning patterns with remotely sensed climate variables.,

We will follow the "Cambridge visit" format, where we give (1-2 hour) tuition sessions to small groups of students with related interests, who then get on with their work, while we are present to help out.

9th November. Arrive Huanta. HL, DR.

10th November. **Data analysis workshop** HL, DR.

11th November. **Data analysis workshop** HL, DR.

12th November. **Data analysis.** UNAH Conference. HL, DR.

13th November. **Data analysis.** UNAH Conference. HL, DR.

14th November. **Data analysis.** UNAH Conference. HL, DR.

15th November. Fly Lima. HL, DR, (ML & vehicle 1 returns to Cusco).

16th November. HL, DR flight to UK.

Group 3: Hydology. JF.

Objective: to collect water quality related data and samples from across the water study site network plus sediment samples where appropriate and soil samples to complement those already collected. To train UNAH staff and students in field techniques accordingly.

1. **Water quality assessment and sampling techniques**, focusing on standardized methods for measuring physical and chemical parameters (e.g., pH, conductivity, dissolved oxygen, turbidity, nutrients). Students will learn how to design sampling strategies, handle equipment, and ensure sample integrity for subsequent laboratory processing and analyses.
2. **Sediment and soil sampling for environmental characterization**, emphasizing the collection of representative samples to evaluate contaminant levels, grain size, and organic matter content. Participants will gain experience in sampling, preservation, and georeferencing procedures to complement existing datasets within the study network.
3. **Integrated field training in hydrological monitoring**, combining data collection with in situ observations of land use, vegetation cover, and hydro-morphological features. Students and staff will develop practical competencies in environmental data recording, quality control, and field safety, enhancing their capacity for multidisciplinary watershed research.

We will follow the "Cambridge visit" field format, where we run morning or afternoon sessions for small groups of interested students. This then to be followed by groups assisting in the laboratory with processing samples and data under our instruction.

23rd November. Arrive Huanta. JF.

24th November. In Laboratory (JOSACO) - calibration of equipment & preparation for fieldwork + UNAH staff & students.

25th November. Water and sediment sample sites (RC01) & PTAR visit. JF + UNAH staff & students.

26th November. Water sample sites (Q1.1). JF + UNAH staff & students.

27th November. Water and sediment sample sites (Q1.2N.U1 & Q1.2S.L2). JF + UNAH staff & students.

28th November. Water sample & soil sites (Q3.1 & RC02). JF + UNAH staff & students.

29th November. Biodiversity & Soils. Transect ex. JF + UNAH staff & students.
Objective: an investigative field exercise to identify and link variations in vegetation to soil types across three distinct soil types and in doing so to train UNAH staff & students (Ciclos 1+) in relevant techniques.

30th November. Soils analysis workshop. JF + UNAH staff & students.
Objective: to process and analyse the soil samples (40+) collected from the Huanta area and in doing so to train UNAH staff & students in relevant techniques.

1st December. Water, sediment and soil sample sites (Q3.2L & Q3.3M). JF + UNAH staff & students.

2nd December. Water sample and soil sites (Q2.1L2). JF + UNAH staff & students.

3rd December. Water sample and soil sites (Q2.2L1 & MAN06). JF + UNAH staff & students.

4th December. Water sample sites (Q2.3L). Sample processing. JF + UNAH staff & students.

5th December. Water sample sites (MAN01). Equipment maintenance & storage. Stock check. JF + UNAH staff.

6th December. Fly Lima. SGS lab. water samples drop off. JF y JPO.