

New Caledonia Mapping Project

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Overview and Fieldwork Results

Our mapping group chose to go to New Caledonia as this was both an area which no previous group had worked on, as well as being a place with very unique geology. We spent 31 days in the mapping area, two of those days being dedicated to asking for land-use permission and 29 spent on mapping. Five further days were dedicated to various tasks such as writing up, getting groceries, or renting a car, while five days were spent visiting the island in our free time. We were staying in a little bungalow on a peninsula, with a beautiful view of sea and its many islands.

The mapping area was a forty-minute drive away from our bungalow, and we had to walk an additional 40-60 minutes to get into and out of the field. This, combined with short days, meant that we spent most of our time mapping or doing household chores. Exposure in the mapping area was generally limited to creek beds and ridges, so most of our data ended up being collected in those areas.



The bungalow lent to us by Pierre Robineau



Left: A typical limestone outcrop

Right: A view of the mapping area seen from the south. The low-lying areas tended to be sediments



The mapping terrain was very hilly, and the vegetation varied drastically from desert-like brush at low elevations, to jungle at the base of the mountain range, back to a different type of brush on the peridotite massif. This change reflected the change of geology from siltstone to slightly better soils on top of limestones and basalts to the nickel rich laterites of the peridotite which required the evolution of tolerant species. The wildlife in the area was comprised of a variety of typical small mammals and lizards. The birds, however, stood out with amazing plumage and unique birdsongs.

Results of Mapping

On the large scale, we mapped lots of cool structures like faults and folds, which seemed to be mostly related to the obduction of the younger of two ophiolites. Our work indicated similar stress fields as what had been studied by the geological research bureau of the island on a 1:50,000 scale, which was reassuring. Our higher resolution map indicated that some contacts they had put down as fairly linear were in fact complicated and faulted.

On a smaller scale, we found some quite cool fossils in the silt beds, including Nautiloid and bivalve shells. Ursula showed some of the photos to researchers at CASP who have asked for our samples and will hopefully get back to us with more details on what exactly we found. We also found trace fossils, fiamme, boudinage, and lots of other cool ESA course material in the sedimentary beds. We have yet to analyze thin sections, which should hopefully give us more insight as to the ESB side of things.



Left: A fossilized fragment of a bivalve shell

Below: The mapping area seen from the south. The mountains of the far horizon are the peridotite ophiolite which overlies much of the island



Other Highlights

The beauty of the island was matched only by its diversity of landscapes. Scattered throughout the island we could visit dense tropical rainforests, highlands dominated with orange soils, rugged untouched coastline, and coral reefs. The biodiversity of the island was astonishing. We were lucky enough to be able to see the endemic cagou, a flightless bird with no fear of predators, as well as other species of fish, corals, dolphins and sharks none of us had seen before. One day we traversed the island by car, driving the narrow roads through the central mountains to reach the wilder east coast, which was very mountainous and lush. On another day off, we went to the far south and

explored the Parc de la Riviere Bleu, a beautiful preserve that is perhaps the most unique landscape on the island. One unfortunate fact of life on the island is nickel mining, which uses the Ni-rich laterites that develop on top of the ophiolite as a result of weathering. This mining requires removal of large swaths of vegetation and land, pollutes rivers, and is very energy intensive to refine. While this is necessary for our global economy and is the foundation of the local economy, it is unfortunate that it occurs in such a beautiful and otherwise untouched place. Parts of the local population, especially indigenous tribes, seemed to be very against mining.



Left: The cagou

Bottom Left: The flooded trees of the Parc de la Riviere Bleu

Bottom Right: The rugged eastern coast of the island



The cultural history of the island was also something that was inescapable. Attitudes to citizens of mainland France were not always the most welcoming, however this did not affect our group at all. In fact, probably the most special part of the trip was the hospitality of the local population. There are too many stories to recount, but I will close this report by offering just a few:

- The tribe on whose land we were working on offered us a five-kilogram bag of passion fruit when we introduced ourselves.
- On our last day of mapping, the farmer whose land we were using invited us to a family Sunday lunch, which was one of the best meals we had ever eaten.
- The owner of the local Nakamal (traditional kava house) hosted a barbecue that some of the town attended for our last night.