

ARM Mobile Facility 1

ARM



EPCAPE

Guest Instrument Guidance

Eastern Pacific Cloud Aerosol Precipitation Experiment

Overview

The Eastern Pacific Cloud Aerosol Precipitation Experiment (EPCAPE) aims to deploy the ARM Mobile Facility 1 (AMF1) to the Ellen Browning Memorial Scripps Research Pier (Scripps Pier) for measurements beginning in February 2023 and continuing through January 2024. A supplemental site, which will host an ARM scanning radar and other ARM instrumentation, is proposed about 3 km away on Mt. Soledad.

There will be two intensive operational periods (IOPs): EPCAPE-Chem, focused on characterizing low clouds and their chemistry at Mt. Soledad, extending from April through June 2023; and EPCAPE-Radiation, characterizing higher clouds and their radiative properties extending from July through September 2023. More details on the EPCAPE campaign's science goals are available in the [EPCAPE science plan](#).

Intent

This document intends to guide collaborators who want to participate in EPCAPE by proposing guest instrument deployments. ARM welcomes and encourages guest scientist engagement with ARM field campaigns to leverage the best science possible from these studies. Any guest instrument deployment that requires logistical support from the ARM facility (i.e., power, operator support, shelter, etc.) must be proposed to ARM through the ARM field campaign process (<https://www.arm.gov/research/campaigns>). Please note that ARM provides logistical support and use of facility resources for approved guest instrument deployments but does not provide research funding. Investigators are responsible for obtaining their own funding for research, data analysis, travel, and/or other expenses associated with a guest instrument deployment.

Since the ARM observatory will be on a pier, these guidelines are intended to support guest instruments within the operational constraints of the pier. Due to the limited footprint and the special additional approval requirements by the California Coastal Commission, there may be more interest in guest instrument deployments than ARM can support. Therefore, **scientists are encouraged to submit their ARM field campaign proposals by February 15, 2022, for priority consideration**. Depending on the available space and logistical requirements, ARM may not be able to consider proposals submitted after that date for support.

EPCAPE Sites



Figure 1. Locations of EPCAPE study sites.

For the EPCAPE campaign, the AMF1 instrumentation will be located at two sites managed by the University of California San Diego (UCSD) Scripps Institute of Oceanography (Scripps). The campaign plans to locate most AMF1 instrumentation at the main site on the Scripps Pier and additional instruments at the Mt. Soledad site (Figure 1). Scripps Pier will host six AMF1 shelters: five located along on the north side of the pier and the Aerosol Observing System (AOS) will sit at the end of the pier between the existing instrument sheds.

The Mt. Soledad site will host an ARM scanning radar as well as some additional instruments and a Scripps aerosol measurement shelter. This site is less than 2 km inland (250 m above sea level), which will allow for sampling downwind of the pier below, in, and above clouds, depending on conditions.

Scripps Pier

[\(Click here to be taken to this location in Google Maps.\)](#)

Scripps Pier will host the primary components of the ARM mobile observatory, including six ARM shelters, several instruments, and a weather balloon launch area. This location will operate for the entire year of the campaign.



Figure 2. ARM container layout on Scripps Pier.

The pier location imposes constraints on space and infrastructure since this is a highly used research asset for Scripps. Physical space on the pier is limited, and the footprint of six shelters and AMF1 equipment exacerbates this constraint. Further, the demands for electrical power by the ARM observatory consume much of the available capacity.

ARM's footprint on the pier is significant and, unfortunately, ARM is unable to support additional guest shelters since Scripps needs space to maintain its other operations such as launching and recovering watercraft. However, space can be made available inside and on top of the ARM shelters, as well as other locations nearby.

In addition to the ARM-managed space, Scripps pier also has some spaces that may be available for guest instruments. However, these are currently heavily used by existing projects and are prioritized for Scripps-based researchers. The Scripps facilities are:

- Scripps Pier shelters (3)
- Pump house roof
- Pump house shelter

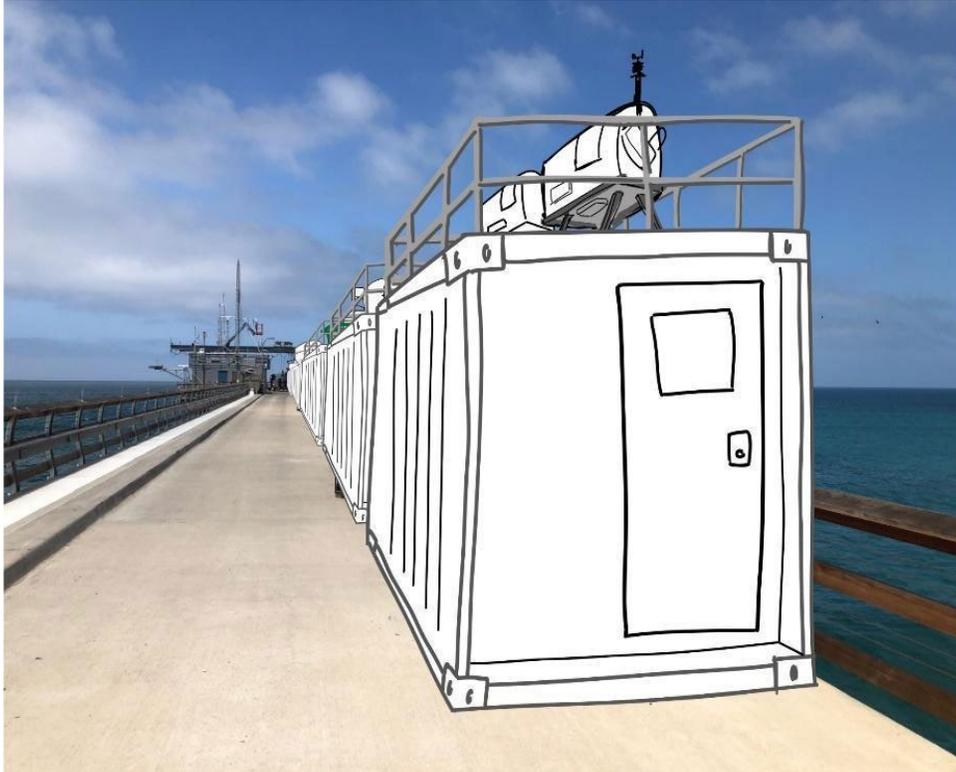


Figure 3. Artist rendering of ARM containers on Scripps Pier Causeway. Roadway to the left of the ARM shelters is intentionally left clear for watercraft access.

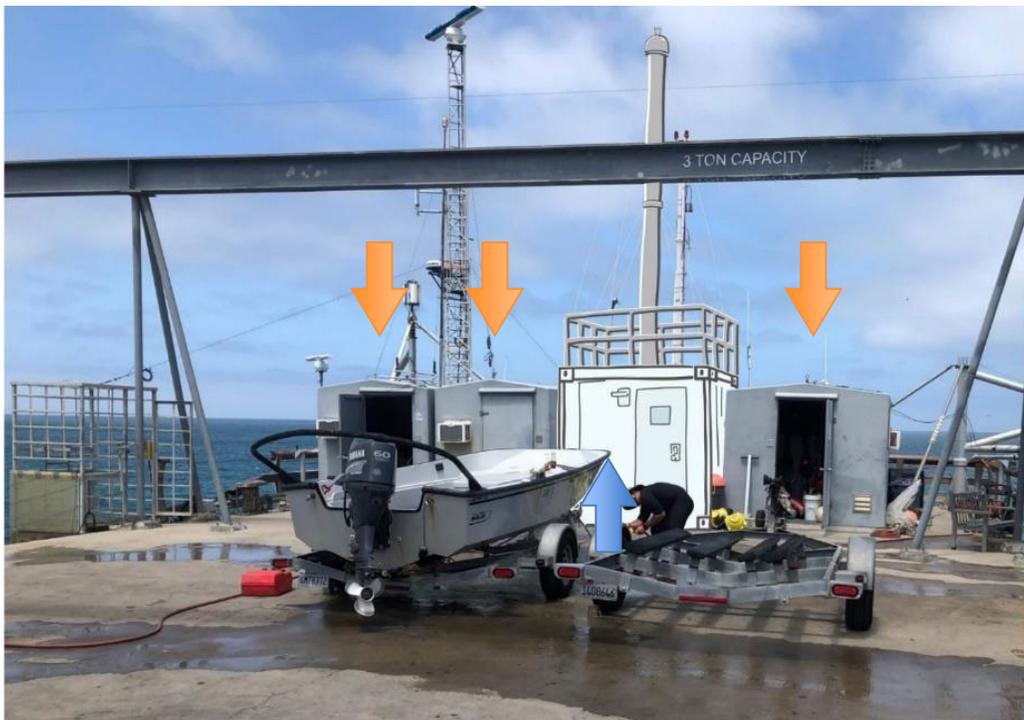


Figure 4. EPCAPE deployment at the end of the Scripps Pier: Orange arrows are pointing to the three Scripps Pier shelters. The blue arrow is pointing to the intended AOS deployment location.



Figure 5. Top of pumphouse roof with artist rendering of proposed ARM instrument deployment locations.



Figure 6. Interior of pump house lab.

ARM Instrument Shelters and Pier Deck Guidance

ARM shelters are 8' x 20' shipping containers with handrails and ladders for rooftop access with limited space available on top. Instruments may be mounted to the handrails or placed directly on rooftops. Approximately one rack's worth of available space will be distributed within the ARM shelters, and up to six linear feet of table space may be available. Some instruments can be placed on the pier deck between the ARM shelters and *possibly* in other locations (pending Scripps' approval). Please note that *additional shelters cannot be supported on the pier*.

Procedure

- **First, discuss** your guest instrument request with the AMF site operations manager.
- **Submit your ARM field campaign request by February 15, 2022, for priority consideration.**
- **Be clear about how much space** each instrument needs, and be aware that very little working space for people will be available (*remote access may be provided for instruments).
- **Be clear about the dates** of your proposed deployment and any flexibility around those dates (i.e., deploying for the entire campaign, for an IOP, for a specific meteorological season, etc.).
- **Note any energy-emitting device will need to have a clear path** for receiving permissions (such as visible lasers or radars).
- **Submit photos of instruments and equipment** that need to be mounted on top of or outside of ARM shelters. The California Coastal Commission must review all equipment on the pier for visual impact.
- **Be clear about energy requirements.** How much power (watts) is needed, and if you have other supporting equipment (pumps, UPS units, power conditioners) that might impact the energy budget.
- **Note special requirements**, such as external inlet structures, sample storage, special access requirements, and other needs.

Scripps-Managed Space on Scripps Pier

ARM will review and assist in securing the use of Scripps facilities and will provide logistical support for guest instruments deployed in the Scripps-managed spaces. Please be clear in your proposal if you are specifically requesting space in one of the Scripps shelters, and be aware that these spaces are prioritized for Scripps researchers' uses. Otherwise, use the procedure above for requesting ARM support for guest instruments in these locations.

Mt. Soledad Scripps Property

[\(Click here to be taken to this location in Google Maps.\)](#)



Figure 7. Overview (left) of Scripps sites in La Jolla, California, with enlarged detail of Mt. Soledad (right).

Mt. Soledad will host an ARM scanning radar for the entire campaign, as well as a Scripps aerosol shelter. If there is significant demand for additional shelter space at this location, ARM will consider adding a guest instrument shelter.

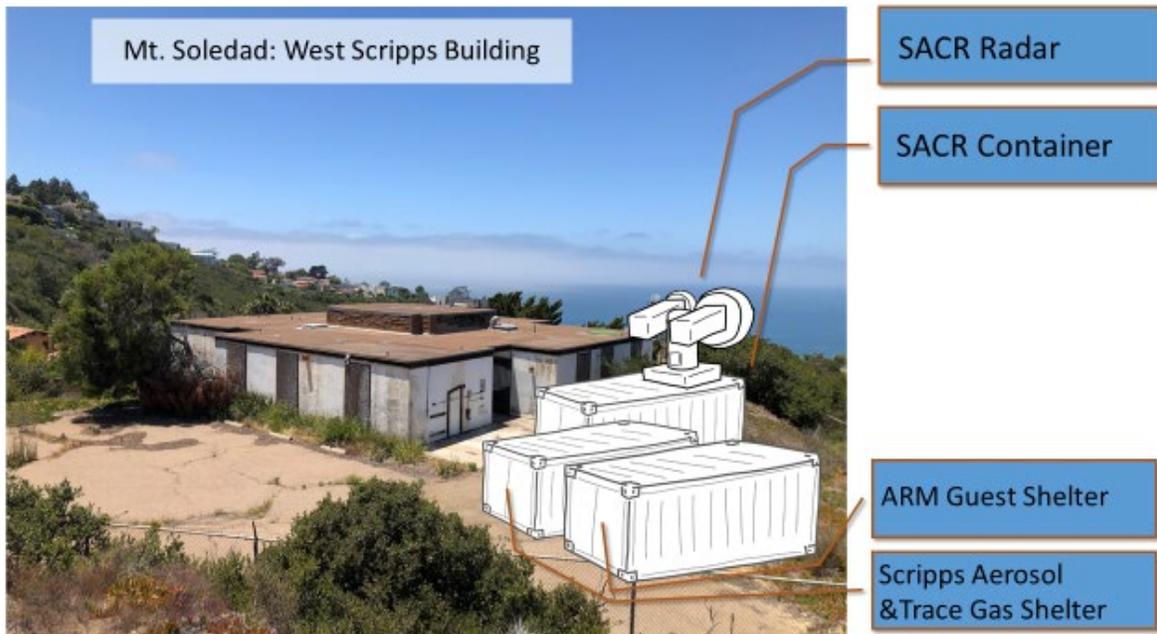


Figure 8. Artist rendering of EPCAPE Mt. Soledad deployment location.

The Principal Investigator team is proposing two intensive operational periods (IOPs) at this location: EPCAPE-Chem from April through June 2023; and EPCAPE-Radiation from July through September 2023.

Guidance for Mt. Soledad Guest Instruments

None of the buildings at this site are in a condition to be used or occupied. As such, the only space available will be on the grounds or in a shelter. Guest scientists may propose placing shelters at this site since there is a paved area available for this. There will be no space available in the ARM radar shelter; however, as noted above, ARM will consider providing a guest instrument shelter to this location based on requests for it. Requests for guest instruments (or instrument shelters) will be given priority consideration for proposals submitted by **February 15, 2022**.

Summary

- **Submit your ARM field campaign request by February 15, 2022, for priority consideration.**
- **Note that space in buildings is not available, only on the grounds or inside a shelter. Guest shelter proposals are welcome.**
- **Note any energy-emitting device will need to have a clear path** for receiving permissions (such as visible lasers or radars).

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