JPAC Underwater Geographic Information System (UGIS)

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JPAC conducts global search, recovery, and laboratory operations to identify unaccounted for Americans from past conflicts in order to support the U.S. Department of Defense's personnel accounting efforts.

Why create an Underwater GIS?

- Assess, analyze, identify and manage underwater military losses and archaeological site information.
- Determine the environmental feasibility of conducting underwater investigation and recovery activities.
- Prioritize investigation and recovery efforts in order to achieve the best possible accounting results.
- Deliver mission planning and post-mission reports and map products.
- Access and distribute geographic information to JPAC sections, and investigation/recovery teams in the laboratory and/or field.
- Preservation and loss prevention of historical information and knowledge, including storage and warehousing of underwater investigation survey and recovery data.

Contribute to UGIS!

JPAC seeks the support and cooperation of Asia-Pacific nations, underwater cultural heritage specialists and the regional diving community to assist with the inventory and protection of U.S. military archaeological sites under water through the sharing of national or regional archaeological inventory data. Please contact us to support our mission.

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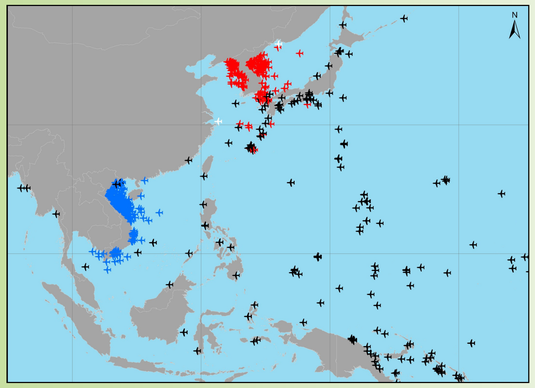
Phase 1: Inventory

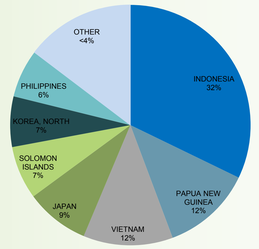
A primary goal of UGIS is to develop a comprehensive inventory of all underwater U.S. military losses including aircraft and ships from World War II, Korean War, Vietnam War and Cold War for the entire Asia-Pacific region. Inventory and environmental data are used to quickly access and identify geospatial information pertaining to U.S. military losses in marine, lacustrine, riverine, estuarine, and aquaculture environments. These data are digitally warehoused in UGIS and used to support JPAC underwater investigation and recovery missions.

Distribution of U.S. Military Aircraft Losses in Asia-Pacific Region



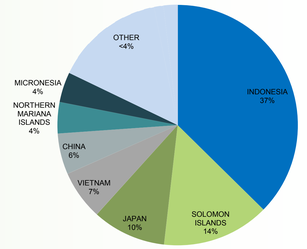
Loss Incidents: World War II (74%) · Vietnam War (15%) · Korean War (11%) · Cold War (<1%)

Underwater Loss Incidents (by Country)



Total: 1,900

Underwater Casualties (by Country)

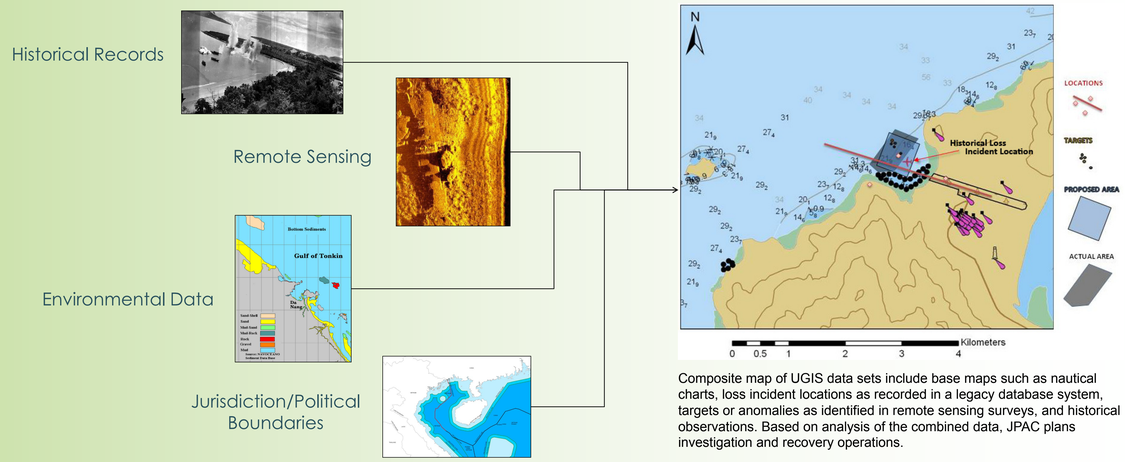


Total: 6,446

Phase 2: Analysis

UGIS provides a composite map or layers of historical, remote sensing, environmental, and political geo-spatial features that can be used to assist in the planning, management and recovery of U.S. missing persons from past conflicts. Vector data sets developed in UGIS include:

- **Locations**: features derived from historical records such as witness observations and aerial photographs.
- **Targets**: features derived primarily from remote sensing survey operations.
- **Areas:** survey or recovery areas proposed for investigation or recovery operations based on locations, targets, and other environmental (e.g., bathymetry, sediments) and political information (e.g., marine boundaries).



Composite map of UGIS data sets include base maps such as nautical charts, loss incident locations as recorded in a legacy database system, targets or anomalies as identified in remote sensing surveys, and historical observations. Based on analysis of the combined data, JPAC plans investigation and recovery operations.

Phase 3: Recovery

Planning

Currently, JPAC's underwater archaeology team conducts three investigations (or surveys) and three recoveries (or excavations) around the world each year. Factors such as weather, terrain, site accessibility, and various logistical concerns influence how and when JPAC teams deploy to each specific site.

Investigation

Underwater investigation teams (UIT) utilize a variety of tools and methodologies to locate and correlate crash sites with specific loss incidents and unaccounted for individuals. These include remote sensing technologies such as side-scan sonar, multi-beam sonar, and magnetometer, witness interviews, and diver ground-truthing. If enough evidence is found, a site is then recommended for recovery.

Excavation

Underwater excavations and recovery teams (URT) are directed by a JPAC underwater archaeologist. The recovery teams consists of specialized U.S. military personnel including Navy/Army divers, combat photographers, medics, linguists, life support analysts, and support staff. Recoveries are conducted according to the *American Society of Crime Laboratory Directors – Laboratory Accrediting Board* (ASCLD-LAB) crime scene standards.

Identification

Human remains and material evidence recovered from the field are returned to JPAC's Central Identification Laboratory (CIL) in Hawaii, where they undergo analyses. Positive identifications are formulated on the basis of multiple lines of evidence including skeletal and dental analysis, mitochondrial DNA (mtDNA), and associated material evidence.

Closure

The final outcome, and the goal of every JPAC mission, is the repatriation and transfer of accounted for remains and associated personnel items to a soldier's surviving family members. More than 1,800 Americans have been identified as a direct result of the work undertaken by JPAC and its predecessors since accounting efforts began in the 1970s.