RESEARCH AGREEMENT

BETWEEN

THE CALIFORNIA INSTITUTE OF TECHNOLOGY

Pasadena, California, U.S.A

AND

INSTITUTO GEOFISICO DEL PERU

Lima, Peru

Introduction

This Research Agreement is intended to formalize continued scientific collaboration between its parties, the California Institute of Technology (Caltech) and the Instituto Geofísico del Perú (IGP), to investigate the dynamics of subduction of the Nazca Plate in Peru. This collaboration is part of the work being performed by Caltech's Division of Geological and Planetary Sciences in the greater Central Andean region, the objective of which is a quantitative physical understanding of plate boundary processes spanning a large range of space and time scales. This project falls within IGP's research program of Space Geodesy Applied to Crustal Deformation and Active Faults as well as within the Seismology program.

Objective of the collaboration

This collaboration focuses mainly on collecting GPS data in Peru in order to understand any causal relationships between seismic and aseismic behavior and the longer-term geologic evolution of both the forearc and the backarc. Towards these ends, it is necessary to constrain the distribution of strain from the shortest to the longest time scales and how they are related in a physically consistent model, which will take into account the rheological structure of the mantle-wedge and the structure of the overlying plate. To achieve these goals, Caltech and IGP will continue to combine their expertise and capabilities in geodetic monitoring (from GPS and SAR imagery), seismology and field geology. The geographic focus of the collaboration is on the central Andean subduction zone. From the perspective of earthquakes, this region stands out as the last remaining segment of the central Andean subduction zone to have not experienced a large earthquake in the last 125 years. The geodetic component of the project will provide information on the process of stress accumulation that will lead to future earthquakes.

Research Agreement

To accomplish these purposes and in consideration thereof and the mutual promises and obligations undertaken herein, the parties agree as follows:

1) Academics

   a) Scientists at Caltech and IGP will jointly carry out research, with the potential for students and Postdoctoral Scholars to be co-advised by Investigators from each party.

   b) Both parties agree to promote interaction among researchers and encourage joint publication. The authorship in any such joint publication will include all researchers with substantial contribution to the research leading to the publication. For publications that are not joint that result from the collaboration by the parties, the other party will be formally acknowledged by language substantially similar to the following: "Data included in this publication were obtained as part of a

joint collaboration between the California Institute of Technology and the Instituto Geofísico del Perú."

2) Equipment and Data

a) Caltech has previously provided equipment and funding to expand the Central Andes Tectonic Observatory Continuous GPS Network (CANTO CGPS) distributed in southern Peru. Caltech agrees to purchase GPS equipment, or equivalent integrated systems, of a type and for a total cost, including all related expenses ("equipment and related expenses"), to be mutually agreed in advance by the parties. IGP will confirm before so agreeing that the total cost falls within the annual budget of IGP to pay for such expenses. IGP agrees to reimburse Caltech for the total cost of the equipment and related expenses within one month of receiving invoice(s) from Caltech.

b) Data from GPS deployments facilitated by this Research Agreement will be shared between IGP and Caltech.

c) Each party must receive written approval to release this data to third parties or to allow third parties to utilize this data.

d) Regardless of the restriction above, any GPS data collected as part of this collaboration will be made available freely to the entire scientific community within three years of its acquisition.

3) Independent Parties

a) All faculty and staff working on any aspect of this collaboration shall be employed either by Caltech or IGP, independent of the terms of this Research Agreement. IGP agrees that IGP faculty and staff are not employees or agents of Caltech, that Caltech has no responsibility to provide Worker's Compensation or other liability coverage, insurance, benefits or compensation for IGP's faculty and staff, and that Caltech will not be responsible for any costs, expenses or liabilities for illness or injuries of IGP faculty and staff.

b) The parties agree that they are independent of each other and neither party bears any responsibility for the negligent acts, omissions or willful misconduct of the other party, its faculty, staff, students and/or agents.

c) IGP agrees to comply with all applicable U.S. laws and regulations in connection with the activities contemplated under this Research Agreement, including but not limited to export/import laws and regulations.

d) "Intellectual Property" includes inventions, technical data, and software created in the course of, or under this Agreement, and owned, under the patent and copyright law of the United States, by one or both parties during the term of this Research

Agreement, but excludes the publications referred to in 1) b. above. Intellectual Property created exclusively by one party shall be owned by that party. Intellectual Property created by inventors or authors from each of Caltech and IGP shall be jointly owned by the parties. The Parties will consult and mutually determine a filing strategy for jointly-owned subject inventions, and afterwards a joint licensing approach for such Intellectual Property rights. Each party shall receive a paid up, irrevocable, nonexclusive and non-transferable license to use the Intellectual Property developed by the other for its own internal purposes during the term of this Agreement.

e) The equipment provided hereunder by Caltech, as well as any data or other resources ("resources") generated in connection with this Research Agreement or otherwise made available by Caltech to IGP, its faculty and/or staff are PROVIDED ON AN 'AS IS' BASIS, WITHOUT WARRANTY OF ANY KIND, AND CALTECH HEREBY DISCLAIMS ANY AND ALL WARRANTIES WITH RESPECT TO THE FOREGOING, INCLUDING, WITHOUT LIMIATION, ALL EXPRESS OE IMPLIED WARRANTIES AS TO THE CONDITIONS OF ANY SUCH RESOURCES OR THE FITNESS FOR A PARTICULAR PURPOSE OF ANY SUCH RESOURCES. IN NO EVENT SHALL CALTECH BE LIABLE TO IGP OR ANY THIRD PARTY FOR SPECIAL, INCIDENTAL OR PUNITIVE DAMAGES, HOWSOEVER ARISING OUT OF OR RELATING TO THIS RESEARCH AGREEMENT, REGARDLESS OF THE BASIS OF THE CLAIM.

4) Miscellaneous

a) Caltech and IGP acknowledge and agree that IGP will conduct any coordination with Peruvian institutions at all levels that is required for the collaboration of this Research Agreement.

b) This term of this Research Agreement will be two years from the date of the last signature below. This Research Agreement and can be extended and/or modified by mutual written agreement of the parties.

c) This agreement can be terminated by either party on three (3) months' written notice to the other party. The obligations under Sections 1) b and 2) a, c, d, and 3) b shall survive termination of this Research Agreement.

d) This Research Agreement shall be governed by, construed and take effect in accordance with the laws of the State of California, United States of America.

IN WITNESS WHEREOF, the duly authorized representatives of the parties have executed this Research Agreement as of the date of the last signature below.

Dated: 7/16/2014 By: Ronald Woodward

Executive President
Instituto Geofisico del Peru

Dated: 6/24/2014 By:

Chair, Division of Geological and Planetary Sciences
California Institute of Technology