

1 **AmeriGEO Implementation Plan (2020-2022)**

2
3 **1. Executive Summary**

4
5 AmeriGEO, the Americas Group on Earth Observations, and formerly AmeriGEOSS, is the regional group
6 on Earth observations. It was established in 2014 by the GEO members in the Americas. and is a
7 continuation of activities conducted in the framework of “GEOSS in the Americas” since the first GEOSS
8 in the Americas Symposium was convened by Brazil in 2007. AmeriGEO provides a framework for
9 cooperation among countries in the Americas in the use of Earth observations, for the benefit of society.
10 Of the 35 sovereign states in the Americas, of those, 16 countries have become formal members of
11 the Group on Earth Observations, while two others are observers.¹ AmeriGEO’s regional approach seeks
12 to both take advantage of existing institutional and technical capabilities of its member countries and
13 leverage resources of other GEO initiatives. AmeriGEO focuses its activities in the four priority areas
14 selected at the 2014 Americas Caucus meeting: agriculture, biodiversity & ecosystems, disaster risk
15 reduction, and water.

16
17 To provide strategic direction for cooperation and to advocate for the local and national interests,
18 AmeriGEO members participate in regional and priority area working groups and other collaborations
19 established through high-level cooperation agreements between and among countries in the Americas.
20 AmeriGEO also seeks to increase institutional and personal capacity through cooperation, acquisition
21 and sharing of technology, training, and through the engagement of experts, stakeholders, and decision-
22 makers in the process of decision-making and implementation of sound policies. AmeriGEO facilitates a
23 regional perspective within GEO’s 2020-2022 Implementation Plan by reflecting the local, national, and
24 regional interests for short and long-term planning, development, and implementation of GEO activities
25 in the Americas. GEO strategic objectives of relevance to AmeriGEO are also outlined in this document.

26
27 *Planned activities for 2020-2022*

28
29 While AmeriGEO has made great strides since its establishment in 2014, through 2019, for 2020-2022,
30 new activities are planned to broaden the initiative’s engagement in the Americas, and further advance
31 its core mission. We plan to continue the activities of the AmeriGEO Coordination Working Group, and
32 hosting of the annual AmeriGEO events. It is also anticipated that the work will continue to focus on the
33 four priority SBAs which were identified for AmeriGEO in 2014.

34
35 **Points of contact:**

36 Dr. Angelica Gutierrez-Magness, AmeriGEO Co-Chair, U.S. National Oceanic and Atmospheric
37 Administration, email: amerigeoss@gmail.com

38
39 Luciano Francisco Parodi Gambetti, AmeriGEO Co-Chair, Chile Ministry of Foreign Affairs, email:
40 lparodi@minrel.gob.cl

41
42

¹ The GEO members are Argentina, Bahamas, Belize, Brazil, Canada, Chile, Colombia, Costa Rica, Ecuador, Honduras, Mexico, Panama, Paraguay, Peru, the United States of America, and Uruguay. Bolivia and Guatemala are observers.

43 **2. Purpose**
44

45 The specific goals of the AmeriGEO initiative are to: (1) address user identified priority coverage gaps, (2)
46 develop actionable tools and services, (3) build capacity in GEO-member countries by leveraging existing
47 expertise, technology, and efforts in-country and across the region, and (4) apply the knowledge and
48 capabilities of partner members to address gaps and challenges. AmeriGEO also contributes to GEO's
49 strategic objectives (SO) Advocate (SO-1), Engage (SO-2), and Deliver (SO-3) as follows.
50

51 **SO-1 Advocate** - AmeriGEO will:

- 52 ● Promote membership in GEO to non-GEO members countries in the Americas.
- 53 ● Promote the implementation and strengthening of regional Earth observing systems.
- 54 ● Promote open community-developed data standards and data sharing. The term "data" refers not
55 only to the observations obtained through in situ or satellite monitoring, but also to information
56 obtained through modeling.
- 57 ● Promote the integration of data products that bring together in situ and satellite observations in the
58 relevant areas of cooperation.
- 59 ● Advocate for GEO-Country members in the region to become authorized users of the International
60 Charter of Space and Major Disasters
- 61 ● To meet this objective, AmeriGEO will coordinate GEO sessions at other organizations events,
62 continue the GEO-CIEHLYC webinars, conduct capacity building activities organized and coordinated
63 through and with the PA's Working Groups, and develop collaborations that demonstrate the
64 benefit of the use of Earth Observations to decision making.
65

66 **SO-2 Engage** - AmeriGEO will:

- 67 ● Strengthen institutional and personal capacity, through sustained and targeted training in the use of
68 Earth Observation (EO) technologies and information.
- 69 ● Enable countries to benefit from improved environmental understanding, to better address societal
70 needs in the following areas: Agriculture, Disaster risk reduction, Water, and Ecosystems including
71 Biodiversity monitoring.
- 72 ● With the support of the GEO Secretariat, coordinate monthly webinars in Spanish. AmeriGEO invites
73 scientists and government organizations of all countries in the region to provide instruction in their
74 areas of expertise and related to AmeriGEO's priority areas. AmeriGEO is the only Regional Initiative
75 with an established non-English activity since 2014.
- 76 ● To meet this objective, AmeriGEO will coordinate capacity building activities through the AmeriGEO
77 PA working groups in collaboration with country members and GEO participating organizations.
78

79 **SO-3 Deliver** - AmeriGEO will:

- 80 ● Leverage technical resources, and scale up existing capabilities throughout the region so that Earth
81 Observations take a leading role in the decision-making process.
- 82 ● To accomplish these ambitious strategic goals AmeriGEO members and participant organizations
83 will:
- 84 ● Develop the AmeriGEO Platform to connect people to information and EO infrastructure, providing
85 applications and tools for understanding and decision making.
- 86 ● Develop and assist in the coordination of pilot projects,
- 87 ● Facilitate interoperability of data resources for reuse at global, regional and/or national scales
- 88 ● Promote learning and mentoring of water data tools, standards, conventions and best practices for
89 improved environmental understanding at the local level.
- 90 ● Engage stakeholders to address global and regional challenges.

- 91 ● Assist in activities that will lead to the strengthening of regional observing GEO networks.
92 ● Use and promote, where appropriate, foundational activities of GEO
93 ● Foster regional cooperation to increase institutional and personal capacity through the acquisition
94 and sharing of technology and training, and engage experts, stakeholders, and decision makers in
95 the process of decision making through cooperation.
96 ● AmeriGEO will use high level cooperation agreements between and among countries in the
97 Americas to improve protection, conservation and sustainable management of natural resources
98 and the environment, and increase transparency and public participation in the environmental
99 decision-making process.
100

101 **3. Previous Achievements**

102

103 *Objectives for the 2017-2019 period*

104

105 As indicated in the previous section, the specific goals of AmeriGEO initiative have been to: (1) address
106 user identified priority coverage gaps, (2) develop actionable tools and services, (3) build capacity in
107 GEO-member countries by leveraging existing expertise, technology, and efforts in-country and across
108 the region, and (4) apply the knowledge and capabilities of partner members to address gaps and
109 challenges. AmeriGEO has also contributed to GEO's strategic objectives 1-3: advocate, engage, and
110 deliver. AmeriGEO has focused on four specific GEO societal benefit areas (SBAs): (i) agriculture and food
111 security, (ii) biodiversity and ecosystem monitoring, (iii) disaster risk reduction, and (iv) water resource
112 management.

113

114 *Outputs of AmeriGEO for the 2017-2019 period*

115

116 The 2017-2019 period improved coordination among GEO member countries, by way of both formal
117 symposia, and regular coordination calls. Activities across the region have been concentrated on
118 addressing the four priority SBAs and have engaged with GEOGLAM, GEOGLOWS, GFOI, GEONetCast-
119 Americas, GEO disaster activities, and GEOBON. The annual AmeriGEOSS Week Symposia held in 2017
120 (in Costa Rica) and 2018 (in Brazil) have served as important platforms by which to highlight work in
121 those areas. These have been complemented by monthly AmeriGEO Coordination Working Group
122 (CWG) conference calls with the GEO Principals, whose discussions have served to (i) highlight EO-
123 related activities being done [related to the priority areas], and also to (ii) identify capacity gaps and
124 opportunities for collaboration. The CWG conference calls have also been open to non-member
125 countries, as a way of further engaging them in GEO. In terms of the audiences reached, the 2017 and
126 2018 AmeriGEOSS Week Symposia had a cumulative total of 258 participants, with 110 people trained
127 from across the region.

128

129 Multiple needs have been addressed case-by-case, e.g. needs for satellite data processing instruction,
130 needs for better understanding of tools already developed, and needs to begin using new assets like
131 GOES-16 and improved GEONetCast assets. Through the 19 USGEO-funded projects whose focus
132 countries include 15 of the 16 GEO member nations in the Americas, we have advanced objectives of
133 the corresponding GEO flagships and initiatives, and contributed to Earth observation capacity building
134 in the Americas since the projects' inceptions in early 2018. Those projects have been done in
135 conjunction with the respective GEO Principals. **Annex I** provides additional details on the
136 accomplishments of the projects, while **Annex II** details how the projects relate to the GEO Work
137 Programme, the SBAs, and the Sustainable Development Goals (SDGs).

138

139 *Lessons learned and challenges*

140

141 Many lessons have been learned as we have progressed over the past three years. Examples include the
142 value of the CWG in keeping countries engaged as changes in government occur, and the corresponding
143 challenge to keep contact information current; and, the value of a distributed, multi-agency GEO
144 construct in ensuring GEO's assets get to the right people and as resilience when government changes.
145 Pragmatic lessons still being learned include how to bring the community together most effectively for
146 the AmeriGEO Weeks, and how to get the training participants to the training given funding limitations.

147 AmeriGEOSS has leveraged social media (Facebook in particular) and at the moment the site has more
148 than 700 followers. The site is used to share training opportunities to the general public, to share
149 environmental activities from the GEO member countries, and to outreach to the broader community.
150

151 **4. Relationship to GEO Engagement Priorities and to other Work Programme Activities**

152
153 AmeriGEO is supporting achievement of the Sendai Framework targets, specifically Targets F and G. In
154 support of Target F, support focuses on enhancing international cooperation to developing countries
155 through adequate and sustainable support to complement their national actions for implementation of
156 this Framework by 2030. This includes: (a) the AmeriGEO Platform, which will offer stakeholders an
157 interface for develop products and services for disaster risk reduction (DRR)-related decision makers in
158 the region, and (b) regional DRR workshops during the annual AmeriGEO week symposia. Regarding
159 Target G, support includes increasing the availability of and access to multi-hazard early warning
160 systems and disaster risk information and assessments to the public, by 2030. Activities include: (a)
161 integrated global remote sensing and modeling systems for local flood prediction and impact
162 assessment, (b) global hydrologic forecasting ensemble, (c) global rapid flood mapping system with
163 spaceborne SAR data / ARIA, (d) Global Wildfire Information System (GWIS), (e) development of a
164 harmonized multi-sensor global active fire data set, (f) approved GNSL supersites in Colombia and Peru,
165 and (g) establishment of a Regional Drought Association for Central America and South America.
166

167 Regarding the SDGs, AmeriGEO's USGEO-funded project efforts cumulatively address 10 of the 17 SDGs,
168 as well as cover all eight of the GEO SBAs [including the four AmeriGEO priority SBAs]. Two of the
169 projects in particular – namely the ones under the Global Flood Risk Monitoring pilot – also support
170 achievement of the Sendai Framework targets. While the Paris Agreement pillars have not been a focus
171 to date, they may emerge as needs to address in the 2020-2022 timeframe. Nevertheless, many of the
172 national and regional activities in the priority SBAs are, to some extent, taking into consideration the
173 effects of climate change. In addition, AmeriGEO has actively sought to connect to the various GEO
174 flagship and GEO initiatives working in the region. Those include:
175

- 176 ○ Capacity building foundation activity
- 177 ○ GEO Biodiversity Observation Network (GEOBON)
- 178 ○ GEO Global Agricultural Monitoring (GEOGLAM)
- 179 ○ GEO Global Water Sustainability (GEOGLOWS)
- 180 ○ Global Forest Observations Initiative (GFOI)
- 181 ○ Earth Observations for Disaster Risk Management
- 182 ○ GEO-DARMA Initiative
- 183 ○ Global Flood Risk Monitoring (GFRM) Initiative
- 184 ○ GWIS Global Wildfire Information System (GWIS)
- 185 ○ Geohazard Supersites and Natural Laboratories (GSNL)
- 186 ○ Global Drought Information System (GDIS)

187
188 Focus is in the 4 priority areas of the AmeriGEO initiative: agriculture, disaster risk reduction, water
189 resource management, and biodiversity and ecosystem management with stronger engagement in the
190 bolded initiatives above, and described below.
191

192 The Agricultural Monitoring in the Americas (AMA) community of practice (www.agamericas.com) was
193 established in 2018 as a joint contribution toward reaching the goals of GEOGLAM Latinoamerica and
194 the AmeriGEOSS Food Security & Sustainable Agriculture area, two GEO initiatives launched in the same
195 year with overlapping geography, focus areas, and communities. AMA is currently led by Dr. Alyssa
196 Whitcraft (GEOGLAM Secretariat), with coordination supported by a small team at the University of
197 Maryland. Funding for this coordination and leadership spans through 2020. In its first year,
198 participation grew to over 20 institutions from 9 countries, with still significant work to be done in both
199 broadening and deepening participation. In 2018, the AMA Working Group met together in person for
200 the first time at the AmeriGEOSS Week in Santos, Brazil, and agreed on several working areas:

- 201 ● Continuation of foundational activities, including outreach and engagement of partners and end
202 users
- 203 ● Development of an inventory of resources: EO-based products, training materials, webinars,
204 tools/algorithms/methodologies, field data, subnational statistics, etc.
- 205 ● Development of a needs assessment protocol, targeted primarily at institutions that serve the
206 public good (e.g. national food/agriculture policy, risk assessment/reduction/management)

207 AMA is in close coordination with the **GEOGLAM** Secretariat due to overlapping staffing. AMA is working
208 to secure participation in the GEOGLAM Crop Monitor for Early Warning from Latin American countries,
209 with an emphasis on national reporting agencies. AMA is also working with the GEOGLAM Thematic
210 Coordination Team on a guidance document for end user engagement and knowledge transfer,
211 leveraging experiences from Asia-RiCE, SIGMA, Sen2Agri, RAD1-CAS China, NASA Harvest, NASA SERVIR,
212 and others. In 2020, the SAR-CBC project will also support strengthening of capacity in the use of SAR for
213 monitoring of agriculture, also complementing the work being done in the context of GEOGLAM Latin
214 America.

215 In disaster risk reduction (DRR), AmeriGEO will support engagement through the coordination of the
216 AmeriGEO Disasters Working Group. We are working to identify the networks and projects of
217 stakeholders in the region in which the participation of AmeriGEO may be relevant. During the
218 AmeriGEO Week symposia, we will hold fora for discussion and training in DRR. We will establish case
219 studies of the evaluation of specific disaster risks using the AmeriGEO community platform, thereby
220 promoting the platform across the countries of the region. Through the coordination with the focal
221 points of Colombia and Peru, it is expected to complete the process of creation of the GNSL Supersites in
222 those countries. In that regard, the experience and support of Ecuador and Chile, who are already
223 participating in the GSNL, with volcanic supersites, will be particularly valuable. During the AmeriGEO
224 Week symposia, we also expect to develop a particular agenda to discuss issues relevant to GNSL.
225 Advances of the projects to build Observing Earth products of the Global Flood Risk Monitoring and
226 GWIS programs will be shared with the stakeholders so that they can incorporate them into their DRR
227 systems. The Disasters Working Group will work to create subgroups on drought-related disasters to
228 build synergies with organizations such as FAO and WMO for the creation of the Central and South
229 American Drought Information System. Also related to the disasters SBA, in 2020, the SAR-CBC project
230 will support strengthening of capacity of the use of SAR data for monitoring disasters, particularly in the
231 countries of Colombia, Ecuador, and El Salvador. By 2021-2022, that capacity should have been
232 translated into the ability to take advantage of data from the BIOMASS (ESA) and NISAR (NASA / ISRO)
233 missions which should have been launched.

234

235 In the Americas, GEOGLOWS will support the development and implementation of a Water Accounting
236 Framework through the AmeriGEOSS Platform. The AmeriGEOSS community platform brings together
237 social, economic and environmental data from a global community of contributors to support communal
238 access, discovery and usability. The platform was established to increase regional capacity to acquire,
239 share, store, maintain and utilize EO data and information. GEOGLOWS will take advantage of the
240 AmeriGEOSS Platform to develop and implement the Water Accounting Framework through the
241 following activities:

- 242
- 243 ● **Develop Partnerships:** Will utilize the AmeriGEOSS platform's collaboration and communication
244 resources to bring the hydrological community and statistical communities together, to
245 encourage and cultivate public-private partnerships, to strengthen national and regional
246 systems to develop and implement the Water Accounting framework.
- 247
- 248 ● **Communities of Practice and Research:** Leverage the platform to interact with communities of
249 practice and research to improve systems, knowledge and technology transfer, and engage the
250 community in coordinated projects that focus on water accounting societal benefits.
- 251
- 252 ● **Providing Access to Data, Tools, and Services.** The key to using hydrological data for decision-
253 making is making the data open, accessible, discoverable and usable. GEOGLOWS will utilize the
254 AmeriGEOSS platforms technical resources, to connect and scale up existing capabilities
255 throughout the region to help stakeholders access, discover, use and apply hydrological data so
256 they can solve problems and improve decision-making capabilities. GEOGLOWS will use the
257 platform to build awareness of EO and support the development of skills to use EO through a
258 variety of venues that include webinars, technical seminars, workshops, and conferences.
- 259

260 Complementing other efforts, in 2020, the SAR-CBC project will support strengthening capacity in the
261 use of SAR for monitoring water resources. Also, in the framework of the capacity building coordination
262 foundational activity, the Earth Observations for Indigenous Management (EO4IM) project will, through
263 2020, continue its activities in Ecuador and Peru, strengthening the capacity of groups there to use Earth
264 observation data for land management.

265

266 In the context of the biodiversity & ecosystems SBA, countries of the region plan to continue to be
267 engaged in activities related to the implementation of **GEO BON**. For example, through 2020, the Pole-
268 to-Pole Marine Biodiversity Observation Network (MBON) project will continue to support countries in
269 the region in the use of Earth observation data for monitoring marine biodiversity. Additionally, linked
270 to the biodiversity & ecosystems SBA, – AmeriGEO and SilvaCarbon will collaborate to conduct capacity
271 building activities in the Americas in the scope of SilvaCarbon work plan in Latin America. This includes
272 the continue support from SilvaCarbon for LCLUC & Ecosystem related training at AmeriGEO Week
273 events in the next three years, including support for coordination and communications at AmeriGEO
274 Week.

275

276

277

278

279

280 **4. Stakeholder Engagement and Capacity Building**

281

282 *Stakeholder engagement*

283

284 AmeriGEO stakeholders are engaged at multiple levels. The AmeriGEO CWG brings together national
285 objectives and needs based on internal coordination within their countries in the priority areas of focus.
286 These needs are then addressed case-by-case based on the need and available resources. Each year's
287 AmeriGEO Week is hosted by a different AmeriGEO member country allowing deeper and broader
288 engagement with stakeholders in that country. At the project level in support of the GEO flagships and
289 initiatives, co-development with stakeholders ensures needs are met and the results benefit the
290 stakeholders.

291

292 *Capacity building*

293

294 At a regional level, each of the annual AmeriGEOSS Week Symposia has focused on both engaging
295 stakeholders and strengthening existing capacity. As such, those Symposia have featured presentations
296 exploring the accomplishments of the various ongoing initiatives, and also training events. These Weeks
297 include individual capacity building based on needs and allow engagement with new stakeholders who
298 attend the training and the symposium component. The host country's GEO is strengthened in the
299 organization and participation in the Weeks as a byproduct of the co-organization and outreach offered
300 by the multi-national organizing committees. For example, across the years, the Weeks have featured
301 hands-on trainings in the use of the GEONETCAST platform. Additionally, the 19 USGEO-supported
302 projects have a strong focus on helping strengthen individual and national capacity to use Earth
303 observation data to address specific issues within the major initiatives and flagships.

304

305

306 **5. Governance**

307
308

309 The Americas Caucus, led by the GEO Principals of the member countries, provides oversight of the
310 AmeriGEO initiative. The AmeriGEO Coordination Working Group (CWG) members provide leadership
311 and coordination of AmeriGEO. The CWG's Terms of Reference (TOR) was approved at the November
312 2016 Caucus meeting, and revised to include 2-year co-Chair terms in August 2018.

313

314 The purpose of the CWG, established by the Americas Caucus Principals, is to coordinate and build on
315 institutional and technical capabilities of its member countries, and to leverage the resources of other
316 regional and global initiatives to support the implementation of the GEO Strategic Plan 2016-2025 for
317 the benefit of the Americas. The CWG's duties include: advising the GEO Principals of the Americas
318 Caucus on the activities of the priority areas; adopting an inclusive approach; identifying and
319 communicating local, national, and regional interests of the AmeriGEO member countries and
320 stakeholders for activity planning; promoting and coordinating regionalization of GEO global and
321 foundational activities; fostering national and regional cooperation; working towards common
322 AmeriGEO objectives; recommending indicators of success and monitoring progress towards AmeriGEO
323 objectives; and demonstrating the value of EO through its uses, especially in decision-making.

324

325 The TOR outlines AmeriGEO's Coordination Working Group leadership structure through two co-chairs;
326 membership that includes up to two representatives per country; meetings annually in person and
327 monthly by telecon; reporting to the Americas Caucus; and costs incurred being the responsibility of the
328 GEO member countries that incur them. AmeriGEO is currently co-chaired by the United States of
329 America, in the person of Dr. Angelica Gutierrez-Magness of the National Oceanic and Atmospheric
330 Administration (NOAA) and Chile, in the person of Luciano Francisco Parodi Gambetti Ministry of Foreign
331 Affairs.

332

333 Communications with the AmeriGEO community is through email, telecoms, AmeriGEO Weeks, and a
334 community web platform (www.amerigeoss.org). AmeriGEO also maintains Facebook
335 (<https://www.facebook.com/AmeriGEOSS>) and Twitter accounts (<https://twitter.com/AmeriGEOSS>).

336

337

338 **6. Resources**

339

340 The investment in this initiative currently includes in-kind contributions from CONAE from Argentina;
341 National Weather Service from Belize; INPE, National Hydrometeorological Services, and ITAMARATY
342 from Brazil; Environment and Climate Change Canada from GEO Canada; Ministry of Foreign Affairs from
343 GEO Chile; IDEAM, the Humboldt Institute, and CIRMAG from GEO Colombia; CNE and IMN from Costa
344 Rica; MMRREE and FIMCBOR-ESPOL from Ecuador; MiAmbiente of Honduras; INEGI, AEM, and UABC
345 from Mexico; MiAmbiente of Panama; GUYRA from Paraguay; CONIDA and National Agrarian University
346 from Peru; NOAA, NASA, USGS, FGDC, and multiple universities from United States; Military Geographic
347 Service from Uruguay; and observer MARN from Guatemala. Additional participants are continuing to
348 join the technical working groups. Representatives of the AmeriGEO Coordination Working Group have
349 committed to periodic telecons and meetings with AmeriGEO and with their national GEO counterparts,
350 with an estimated value of \$10K/year per the 16 members, plus one observer, or \$170K/year.

351

352 In addition to AmeriGEO coordination, in-kind commitments have been made from multiple global GEO
353 initiatives, including GEOGLAM, GEOGLOWS, GEO BON, and GEONETCast, to focus on AmeriGEO
354 regional engagement. Based on one training or workshop at a minimum and pilot projects, the in-kind
355 contribution from each global initiative is estimated at \$30K / year / initiative, at \$120K / year.

356

357 Specific contributions in the priority thematic areas are also being provided. NOAA will contribute with
358 the National Water Center Laboratory. NOAA and NASA will contribute with activities and the
359 coordination of the GEO BON MBON Pole-to-Pole project. Via its A.50 projects (2017~2020), NASA is
360 also supporting 19 research and capacity building focused projects with linkages to a range of GEO
361 initiatives and activities in the Americas, with 4 projects focused on AmeriGEO. Additional in-kind
362 resources are also being leveraged via the SERVIR-Amazonia effort being established in early 2019. The
363 Humboldt Institute will contribute with the BON in a Box activity. CIRMAG, Colombia and the JRC-EU will
364 contribute through their use of hydrological data for global forecasts. NASA will also contribute capacity
365 building projects and trainings through the DEVELOP and the NASA-ARSET Programs. Data products
366 through the GEONETCast-A system will be in-kind contributions from the contributing countries. The
367 USGS will contribute with the pilot project to develop the AmeriGEO Platform Community Resource.
368 These activities vary in scope. Estimated in-kind contributions are expected to total \$500K/year but will
369 increase as the program grows. Based on estimated in-kind contributions for coordination, global
370 initiative contributions, and specific activity contributions, the projected AmeriGEO resources total more
371 than \$800K / year.

372

373

374 **7. Data Policy**

375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421

GEOSS' 10-Year Implementation Plan outlined the following Data Sharing Principles:

- *There will be full and open exchange of data, metadata and products shared within GEOSS, recognizing relevant international instruments and national policies and legislation;*
- *All shared data, metadata and products will be made available with minimum time delay and at minimum cost;*
- *All shared data, metadata and products being free of charge or no more than cost of reproduction will be encouraged for research and education.*

While the members of AmeriGEO advocate for open access to data – in adherence to those principles – each country reserves the right to its own data policy. Further, while a number of regional datasets exist largely in the public domain (e.g. the SOTERLAC soil database of Latin America), these have not been generated in the context of AmeriGEO and are hence managed externally. Nevertheless, the community platform (www.amerigeoss.org) seeks to provide a means by which countries in the region can contribute data. AmeriGEO plans to continue to use the datasets already available on the GEO Portal, and those being developed by GEO global initiatives and flagships, rather than developing them within the initiative. In cases where AmeriGEO does create new datasets, AmeriGEO will strive to advocate that all participants follow GEO's data principles. Nations without needed infrastructure and / or data policies will be provided examples of what is working in other Americas member nations.

422 **ANNEX I: Previous achievements of the USGEO projects in the Americas**

423

424 The following organizes by sub-region the achievements of the NASA A.50 projects (2017-2020) in the
425 Americas:

426

427 **North America**

- 428 ● Canada, Mexico, and the United States of America are all covered by the [AmeriGEO-focused] Pole-
429 to-Pole Marine Biodiversity Observation Network (MBON) project being implemented by PI Dr.
430 Enrique Montes of the University of South Florida (USF). The project focuses on increasing the use of
431 marine Earth Observation data throughout the Americas, in a way which promotes ecosystem-based
432 management of fisheries and ultimately spur economic growth. Participants from Canada and the
433 US were among the 26 specialists trained during the 1st MBON training workshop, which was
434 hosted in Brazil in August during AmeriGEOSS Week Symposium 2018. The workshop focused on the
435 integration of in situ data with data from US satellite instruments such as MODIS and VIIRS.
- 436 ● Dr. Montes is also collaborating with the Marine and Limnological Sciences Institute of the National
437 Autonomous University of Mexico (UNAM, in Spanish), to host a training workshop on the
438 collection, use, and sharing of coastal biodiversity observation. That workshop will be held in Puerto
439 Morelos, Mexico, from April 1-6, 2019. Thirty-two participants from 18 countries have applied to
440 participate in the upcoming workshop.
- 441 ● Dr. Montes is also coordinating with Mexico's National Commission on Biodiversity Knowledge and
442 Use (CONABIO, in Spanish) regarding distributing the seascape data generated by the MBON project
443 via CONABIO's SIMAR data portal. Requirements for such are expected to be defined by mid-2019.
- 444 ● Also in the context of the MBON project, 36 data loggers have been donated to the project by the
445 Portugal-based company Electric Blue for deployment at 36 sites across North America, Central
446 America, the Caribbean, and South America.
- 447 ● Mexico hold Workshop on Disasters Risk reduction in July 2018 with participation of Mexican Space
448 Agency, NASA and NOAA.
- 449 ● The NASA Earth Science Disasters program works to improve disaster resilience by working with
450 other organizations that have valuable insight on natural hazards. The NASA Disasters team targets a
451 spectrum of disasters including floods, earthquakes, volcanoes, landslides, and oil spills, as well as
452 assesses hazards to vulnerable populations and livelihoods. NASA support more than 70 disasters
453 response during 2018 across the Americas.
- 454 ● The NASA Earth Science Disasters program has in 2019 launched the NASA Disasters Mapping
455 Portal, an ESRI ArcGIS-based web interface for viewing and analyzing the latest near-realtime
456 products and disaster response datasets.

457

458

459 **Caribbean**

- 460 ● The Bahamas: In the insular Caribbean, the Bahamas represents the only GEO member nation
461 formally included in the Pole-to-Pole MBON project of PI Enrique Montes.
- 462 ● While Dr. Montes' project is formally focusing on only the 15 [of 16] GEO member nations in the
463 Americas which have marine territory, through a collaboration with UN Environment's Caribbean
464 Environment Programme and the Organisation of Eastern Caribbean States (OECS), the project is
465 planning to hold a training workshop in Saint Lucia (headquarters of the OECS), to include
466 representation from OECS members: Antigua & Barbuda, Dominica, Grenada, Montserrat, Saint Kitts
467 & Nevis, Saint Lucia, and Saint Vincent & the Grenadines.

468

469

470 **Central America**

- 471 ● Belize, Costa Rica, Honduras, and Panama, as GEO member nations are also included in PI Enrique
472 Montes' AmeriGEO-focused Pole-to-Pole MBON project. A participant from Costa Rica was one of
473 the 26 specialists trained during the 1st MBON training workshop, hosted in Brazil in August during
474 AmeriGEOSS Week Symposium 2018.
- 475 ● El Salvador is one of the three pilot countries covered under the Synthetic Aperture Radar (SAR)
476 virtual Capacity Building Center (CBC) project being led by PI Prof. Franz Meyer of the University of
477 Alaska-Fairbanks (UAF). The project seeks to work with countries develop their capacity in the use of
478 synthetic aperture radar (SAR) data and prepare for the upcoming joint US and India NISAR satellite
479 mission. That project is one of the four AmeriGEO-focused projects, and for El Salvador, the focus
480 activities include using SAR data for landslide mapping and related geohazards. Dr. Meyer has been
481 in touch with personnel from the Environmental Observatory of the Ministry of the Environment &
482 Natural Resources (MARN) to define requirements for remote trainings, to be hosted some time in
483 2019. Personnel from MARN also expressed interest, among other things, in the use of SAR for
484 remote monitoring of volcanic hazards in El Salvador.
- 485 ● Costa Rica: In support of the GEO Biodiversity Observation Network (GEOBON), PI Gretchen Daily,
486 Stanford University, is working on bird distribution models based on climate that is being tested
487 with different Earth Observations variables for the ability to downscale species abundance maps
488 based on ecosystem characteristics.

489

490 **South America**

- 491 ● Argentina, Brazil, and Chile: Dr. Alyssa Whitcraft, University of Maryland, is working on GEOGLAM
492 Latin America. Existing agricultural monitoring (GLAM) systems in Argentina and Brazil are being
493 strengthened, while in Chile, a GLAM system is being established. The project received a Latin
494 America Geospatial World Excellence Award during the Latin America Geospatial Forum in
495 November 2018, for innovation in using Earth Observation in agriculture toward sustainable
496 development in the region.
- 497 ● Argentina, Brazil, Chile, Colombia, Ecuador, and Uruguay were among the countries which
498 conducted coastal biodiversity surveys between September and November 2018 and contributed
499 data to Dr. Montes' MBON initiative. Those data will assist with validation of the data being
500 generated in the context of the project.
- 501 ● Argentina's Ministerio de Agroindustria (Ministry of Agro-Industry), in April 2018, used GEOGLAM-
502 derived MODIS data to declare a state of emergency due to drought. The United States worked with
503 Carlos di Bella, national lead of GEOGLAM-Latin America to provide information to the Ministerio de
504 Agroindustria. Based on the evidence-based information, the Minister of Agro-Industry declared a
505 state of emergency due to a record-breaking drought. NASA data empowered sound policy, saved
506 government resources, and helped Argentine farmers. Project collaborators also conducted a
507 technical mission to Argentina in mid-January 2019, where they collaborated with local collaborating
508 organization Bolsa de Cereales for field data collection. Carlos di Bella also visited CSIRO in Australia
509 for a technical collaboration visit aimed at enhancing Argentina's capability to monitor biomass
510 changes in rangelands. (Dr. Alyssa Whitcraft's project)
- 511 ● Argentina AmeriGEOSS Disasters Working Group held the Disaster Risk Reduction Regional Summit
512 in Buenos Aires September 3-8, 2017.
- 513 ● Brazil: In August 2018 in collaboration with SilvaCarbon an Ecosystems training was provided during
514 AmeriGEOSS Week in INPE, Brazil.
- 515 ● Brazil Include LHASA landslides model from NASA to early Warning System of Rio of Janeiro.

- 516 ● Chile: During the AmeriGEOSS week Symposium in Brazil in August 2018, GEOGLAM’s expansion to
- 517 Chile was discussed during the meeting of the technical working group for GEOGLAM Latin America,
- 518 which also included representatives from Argentina, and Brazil, where GEOGLAM is currently
- 519 implemented, with US support. That project is collaborating with INTA of Argentina, the National
- 520 Supply Company of Brazil (CONAB), and the Institute for Agricultural Research (INIA) of Chile. PI
- 521 Whitcraft and collaborators also visited with national counterparts in Chile, including INIA, during a
- 522 technical visit in early January 2019.
- 523 ● Colombia: Also one of the three pilot countries covered by PI Franz Meyer’s AmeriGEO-focused SAR
- 524 CBC project, and the focus institution is the Institute of Hydrology, Meteorology and Environmental
- 525 Studies (IDEAM, in Spanish). Based on consultations with collaborators at IDEAM, the focus activities
- 526 include using SAR data for mapping deforestation, and an in-person training at IDEAM is planned for
- 527 late 2019.
- 528 ● Colombia is also one of the two pilot countries covered by the Human Planet initiative project led by
- 529 PI Dr. Robert Chen of Columbia University. The project focuses on population and infrastructure,
- 530 and is the only Human Planet project with a pilot country in the Americas.
- 531 ● Colombia: Dr. Victor Gutierrez-Velez, Temple University, is developing maps showing how
- 532 ecosystems that would be affected by infrastructure projects. He is producing assessments of the
- 533 potential impacts on biodiversity and mapping areas that could be managed either through
- 534 conservation or restoration in order to compensate such damage. He is working with the Instituto
- 535 Alexander von Humboldt. (GEOBON)
- 536 ● Colombia: Dr. Jantz, Northern Arizona University, is quantifying Forest Vertical Structure using
- 537 Spaceborne Lidar. He organized 2 one-day workshops in Bogota, Colombia on 27 and 28th
- 538 November to introduce project to collaborators at the Humboldt Institute and other national
- 539 stakeholders; Invitees include government agencies, academic institutions and non-profits.
- 540 (GEOBON)
- 541 ● Chile. Supersites GNSL were approved for Ecuador in 2017.
- 542 ● Ecuador is another pilot country for the AmeriGEOSS-focused project led by PI Franz Meyer, which is
- 543 developing a virtual Capacity Building Center for SAR applications. In Ecuador, the project is
- 544 coordinating with the Central University of Ecuador (UCE, in Spanish), and with Ecuador’s National
- 545 Institute of Research in Geology, Mining, and Metallurgy (INIGEMM, in Spanish). An in-person
- 546 training in collaboration with both entities is planned for late 2019.
- 547 ● Ecuador is also a focus country for another AmeriGEOSS-focused project, along with Peru. That
- 548 project focuses on the use of Earth Observations for Indigenous Land Management (EO4IM), seeking
- 549 to build capacity among members of Ecuador’s Achuar Nation and the Awajun in Peru. PI Tabor
- 550 conducted a needs assessment with indigenous groups in Ecuador in late January 2019. Additionally,
- 551 in February 2019, PI Tabor is leading a first of its kind webinar on NASA’s ARSET platform on how
- 552 Earth observation data can be used by indigenous communities for land management.
- 553 ● Ecuador. Supersites GNSL were approved for Ecuador in 2014.
- 554 ● Additionally, in South America, Argentina, Brazil, Chile, Colombia, Ecuador, Peru, and Uruguay are
- 555 also covered under PI Enrique Montes’ AmeriGEOSS-focused Pole-to-Pole MBON project. At a
- 556 training workshop during AmeriGEOSS Week 2018, in Brazil, 26 representatives from 9 countries
- 557 (many from South America) were in the integration of in situ data with data from US satellite
- 558 instruments such as MODIS and VIIRS.
- 559 ● Peru, Brazil: Dr. Benjamin Zaitchik, John Hopkins University, in partnership with researchers at
- 560 Brigham Young University have successfully, for the first time, piloted a rotovirus model informed by
- 561 Earth observations to predict enteric infections for sites in Iquitos, Peru and Fortaleza. This serves as
- 562 an important milestone to show that Earth observations (precipitation, humidity, soil moisture, solar
- 563 radiance, surface pressure, surface runoff, temperature, wind speed can contribute to the

564 predictions of childhood enteric infectious disease. This model is undergoing peer review. (EO4
565 Health, Health Community of Practice)

- 566 ● Peru As of 2018, implemented the Amazonian and National Surveillance System SIVAN Project to
567 Carry out activities of collection, processing, production, and dissemination of data and information
568 to the corresponding public sector organizations, which contribute to active control, surveillance
569 and protection of the Amazon. Peruvian and national territory.

570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611

ANNEX II: Profiles of the NASA-funded A.50 projects in the Americas

No.	Focus countries	Regional GEO Initiative	GEO Initiative	Project title	Project PI	SBA										SDGs
						biodiv. ecosys.	disasters	energy	agric.	transport	health	urban devt.	water	capacity building		
1	Argentina	AmeriGEO	GEOGLAM	Supporting the Vision for GEOSS in the Americas: Community Building and Capacity Development in Support of AmeriGEO' Food security and Sustainable Agriculture Area	Alyssa Whitcraft				x						x	2, 17
		AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x									x	14, 17
			GEOGLOWS	An AmeriGEO Cloud-Based Platform for Rapid Deployment of GEOGLOWS Water and Food Security Nexus Decision Support Apps	Daniel Ames	x							x			6
2	Bahamas	AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
3	Belize	AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
4	Brazil	AmeriGEO	GEOGLAM	Supporting the Vision for GEOSS in the Americas: Community Building and Capacity Development in Support of AmeriGEO' Food security and Sustainable Agriculture Area	Alyssa Whitcraft				x						x	2, 17
		AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
			E04Health	GeoHealth: A Geospatial Surveillance and Response System Resource for Vector Borne Disease in the Americas	John Malone						x					3
			E04Health	Environmental Determinants of Enteric Infectious Disease: A GEO Platform for Analysis and Risk Assessment	Benjamin Zaitchik						x					3
		GEOGLOWS	An AmeriGEO Cloud-Based Platform for Rapid Deployment of GEOGLOWS Water and Food Security Nexus Decision Support Apps	Daniel Ames	x							x		6		
5	Canada	AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
			GEOBON	Ecosystem Functional Diversity of the Circumpolar Arctic	Howard Epstein	x									15	
			GEOBON	Dynamic Seascapes to Support a Biogeographic Framework for a Global Marine Biodiversity Observing Network(16-GEO16-0042)	Maria Kavanaugh	x									15	
6	Chile	AmeriGEO	GEOGLAM	Supporting the Vision for GEOSS in the Americas: Community Building and Capacity Development in Support of AmeriGEO' Food security and Sustainable Agriculture Area	Alyssa Whitcraft				x					x	2, 17	
		AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
7	Colombia	AmeriGEO	GFOI, GEOGLAM, GEOGLOWS	SAR-CBC: A Capacity Building Center for the Use of SAR in Decision Making	Franz Meyer	x	x		x				x	x	2,6,14,15,17	
		AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
			Human Planet	Population and Infrastructure on Our Human Planet: Supporting Sustainable Development Through Improved Spatial Data and Models for Human Settlements, Infrastructure, and Population Distribution Based on Earth Observations	Bob Chen			x		x		x		x	1,6,7,9,11,15,17	
			GEOBON	Expanding Wallace Biodiversity Modelling Software to Support National Biodiversity Change Indicator Calculations for GEO BON Assessment and Reporting	Mary Blair	x									15	
			GEOBON	Integration of Earth Observations for Decision Making on Biodiversity Management and Conservation in Colombia: Consolidation of the Colombian Biodiversity Observation Network	Victor Gutierrez-Velez	x									15	
			GEOBON	Quantifying Forest Vertical Structure Using Spaceborne Lidar: A GEOBON Essential Biodiversity Variable Application in Colombia	Patrick Jantz	x									15	
		GEOGLOWS	An AmeriGEO Cloud-Based Platform for Rapid Deployment of GEOGLOWS Water and Food Security Nexus Decision Support Apps	Daniel Ames	x							x		6		
8	Costa Rica	AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
			GEOBON	Improving Linkages Between Earth Observations and Ecosystem Service Models with Essential Biodiversity Variables	Gretchen Daily	x									15	
9	Ecuador	AmeriGEO	GFOI, GEOGLAM, GEOGLOWS	SAR-CBC: A Capacity Building Center for the Use of SAR in Decision Making	Franz Meyer	x	x		x				x	x	2,6,14,15,17	
		AmeriGEO	CB	Harnessing Earth Observations to Support Indigenous-Led Land Management	Karyn Tabor	x								x	5,13,1,5,17	
		AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
N/A	El Salvador	AmeriGEO	GFOI, GEOGLAM, GEOGLOWS	SAR-CBC: A Capacity Building Center for the Use of SAR in Decision Making	Franz Meyer	x	x		x				x	x	2,6,14,15,17	
10	Honduras	AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
11	Mexico	AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	
12	Panama	AmeriGEO	GEOBON	Laying the Foundations of the Pole-To-Pole Marine Biodiversity Observation Network (MBON) of the Americas	Enrique Montes	x								x	14, 17	

