

# Updates on COSMOS Converter Tool and Strong-Motion Data at CESMD

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1) California Geological Survey

2) U.S. Geological Survey

# Acknowledgement

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- Ruben Boroshcek (University of Chile)
- Che-Wei Liao, Taiwan Central Weather Bureau
- Claire Johnson (COSMOS)

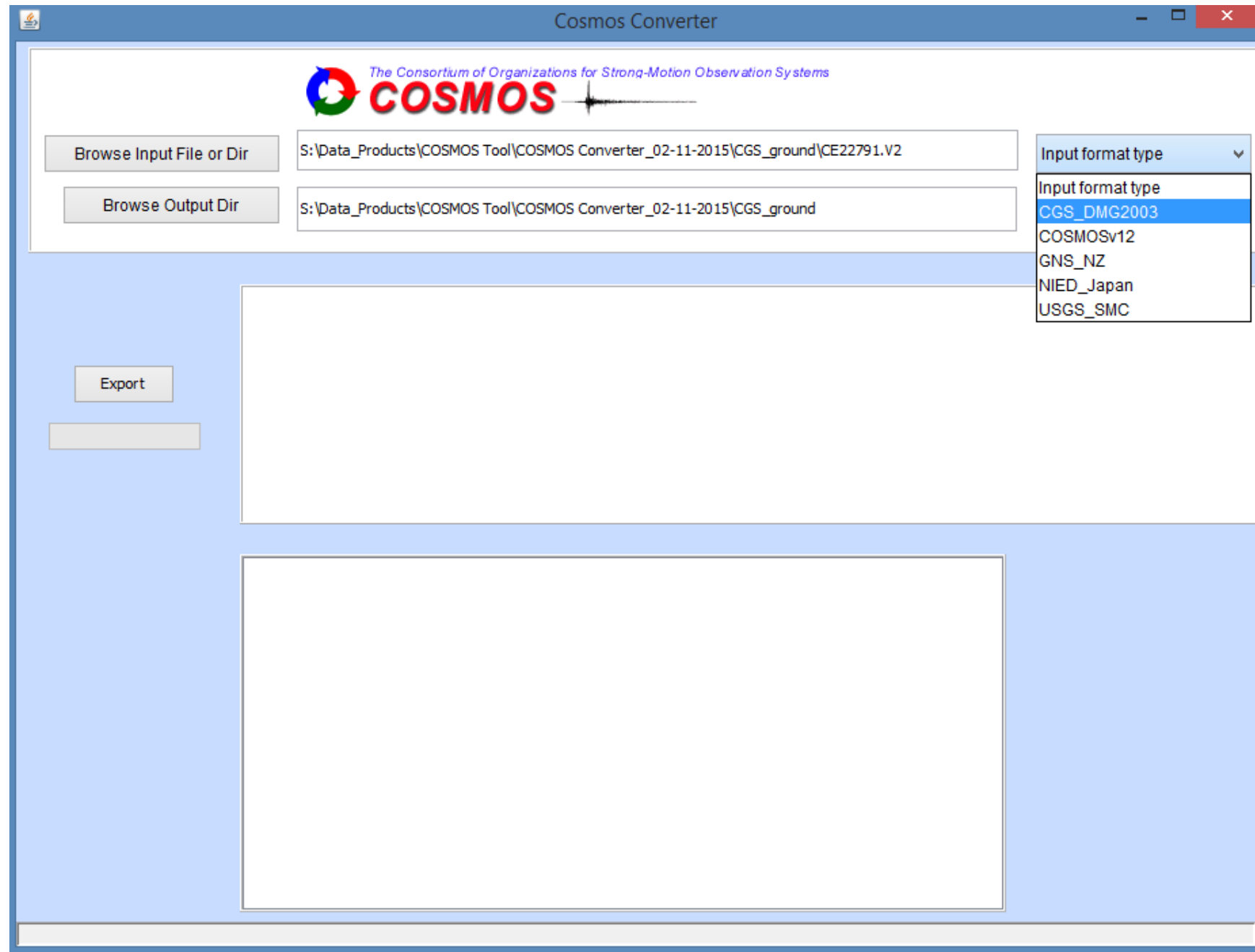
# COSMOS Converter

- Was developed at UC Santa Barbara in 2006 to facilitate using strong-motion data
- Needed some updates to handle changes in the native formats of strong-motion networks and to improve its functions
- Was updated and improved with funding from COSMOS
- It is now ready for download from the COSMOS and CESMD websites

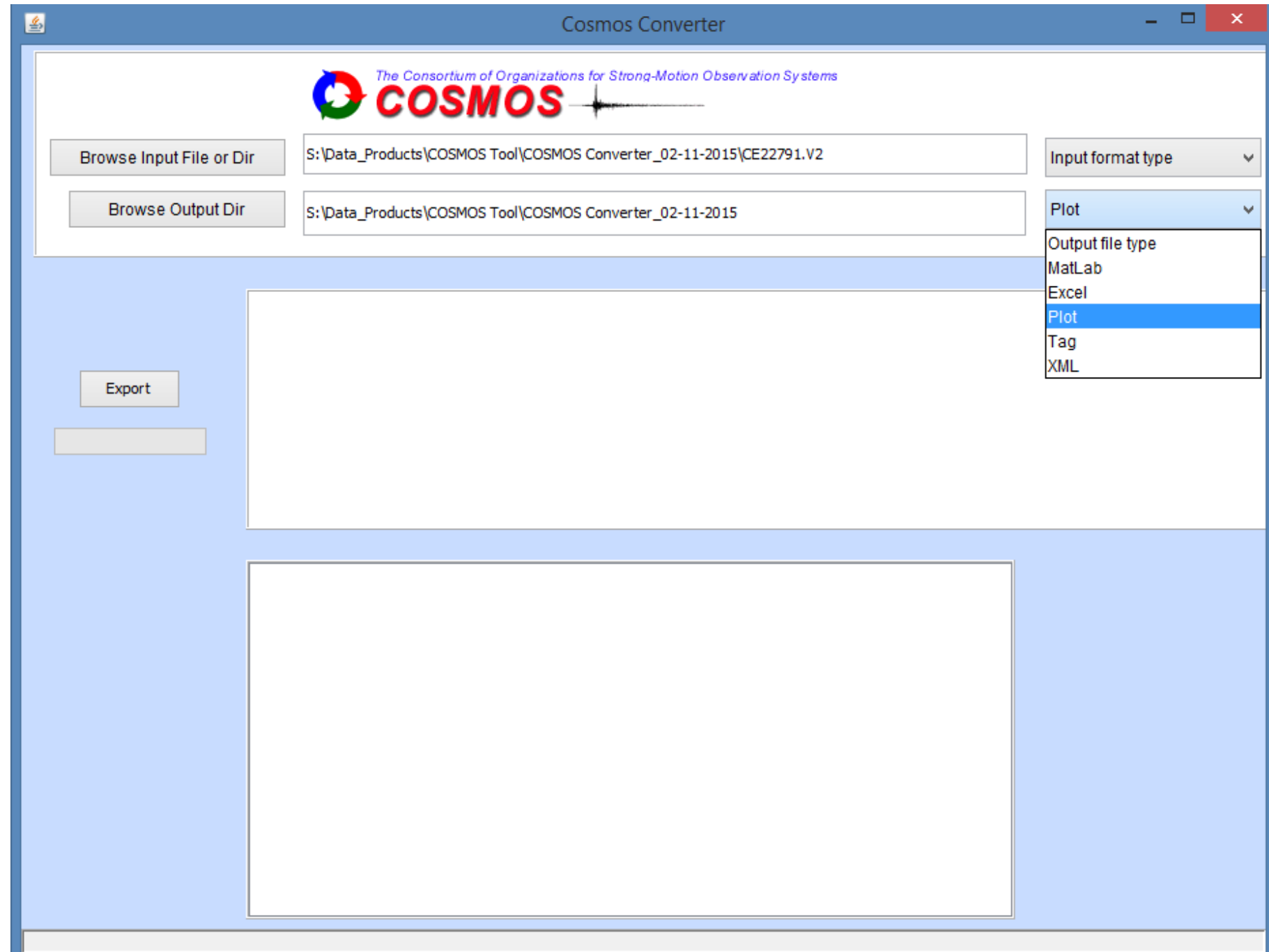
# Features and Functions of COSMOS Converter

- Stand-alone java application that runs on all computer platforms
- Input strong-motion data formats:
  - USGS (processed and raw)
  - CGS (processed and raw)
  - Japan NIED (raw)
  - New Zealand (processed and raw)
- Split multi-channel strong-motion data files (CGS and New Zealand) into separate channels
- Write outputs (one file per channel per parameter) in:
  - Excel spreadsheets
  - MATLAB files
  - VDC Tagged files
  - VDC XML files

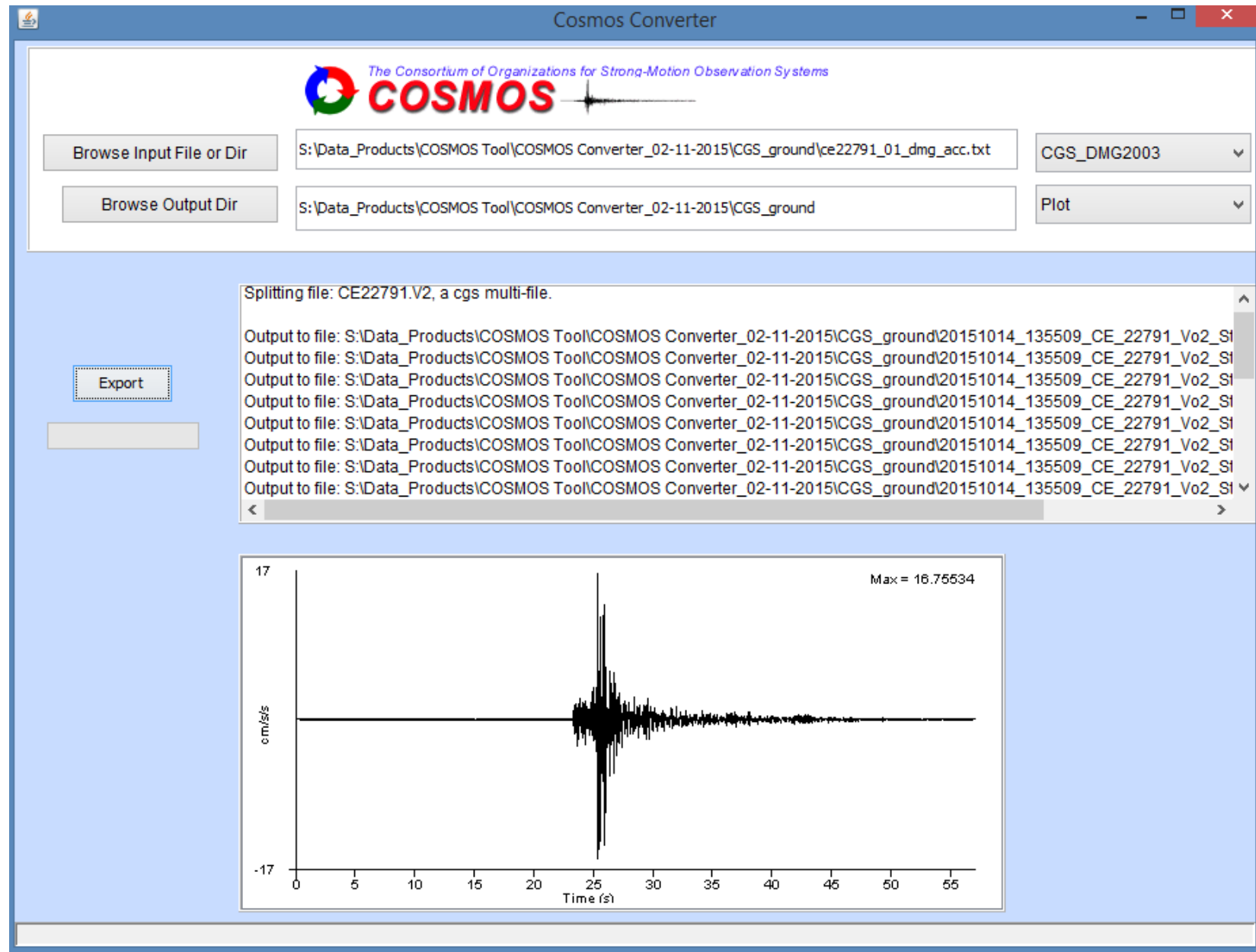
- Browse Input and Output Dir
- Select Input Format Type:
  - USGS\_SMC
  - CGS\_CSMIP
  - GNS\_NZ
  - NIED\_Japan



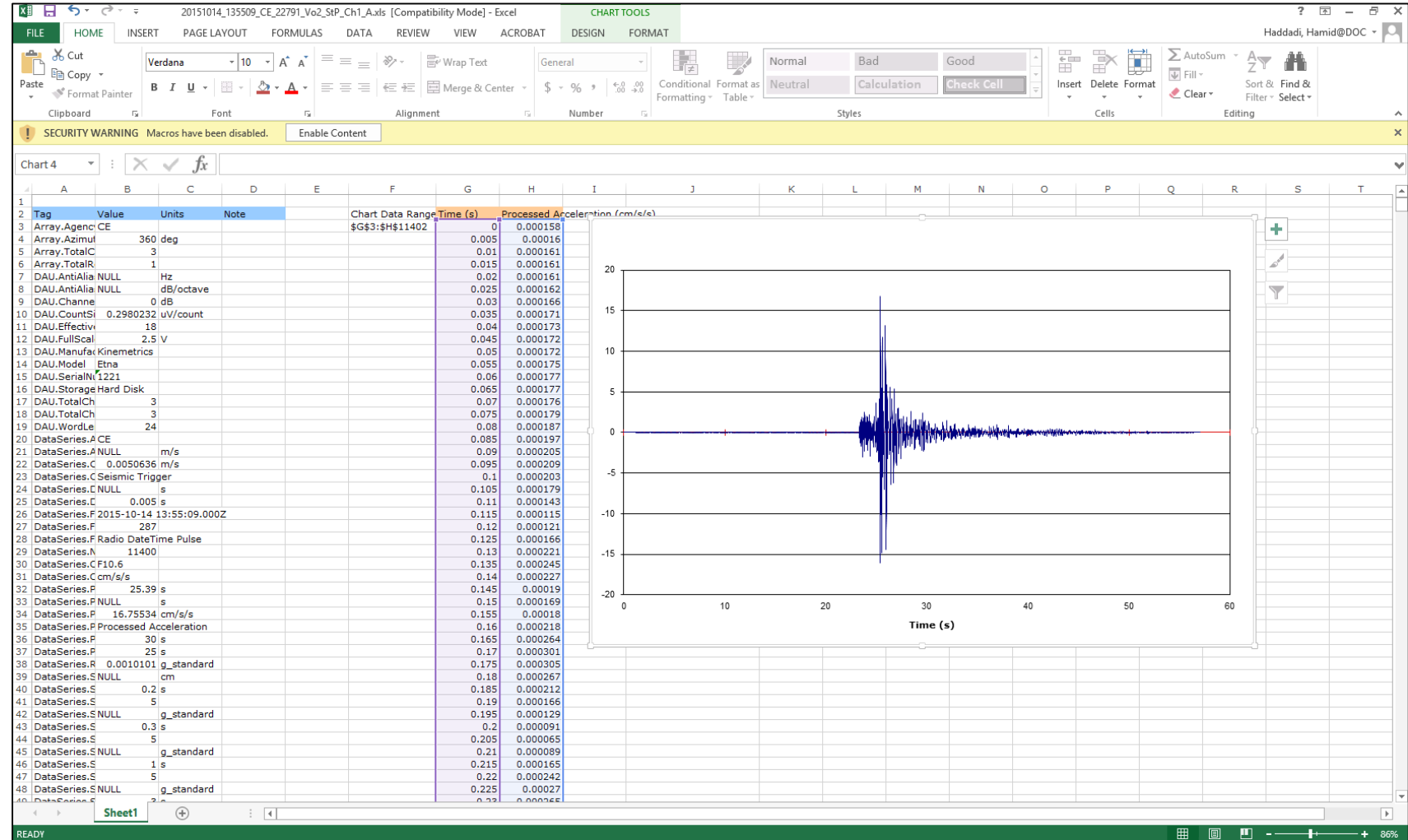
- **Select Output Format Type:**
  - Excel
  - Plot
  - Tagged
  - XML
  - MatLab



# Output: Time Series Plot



# Output: Excel Spreadsheets





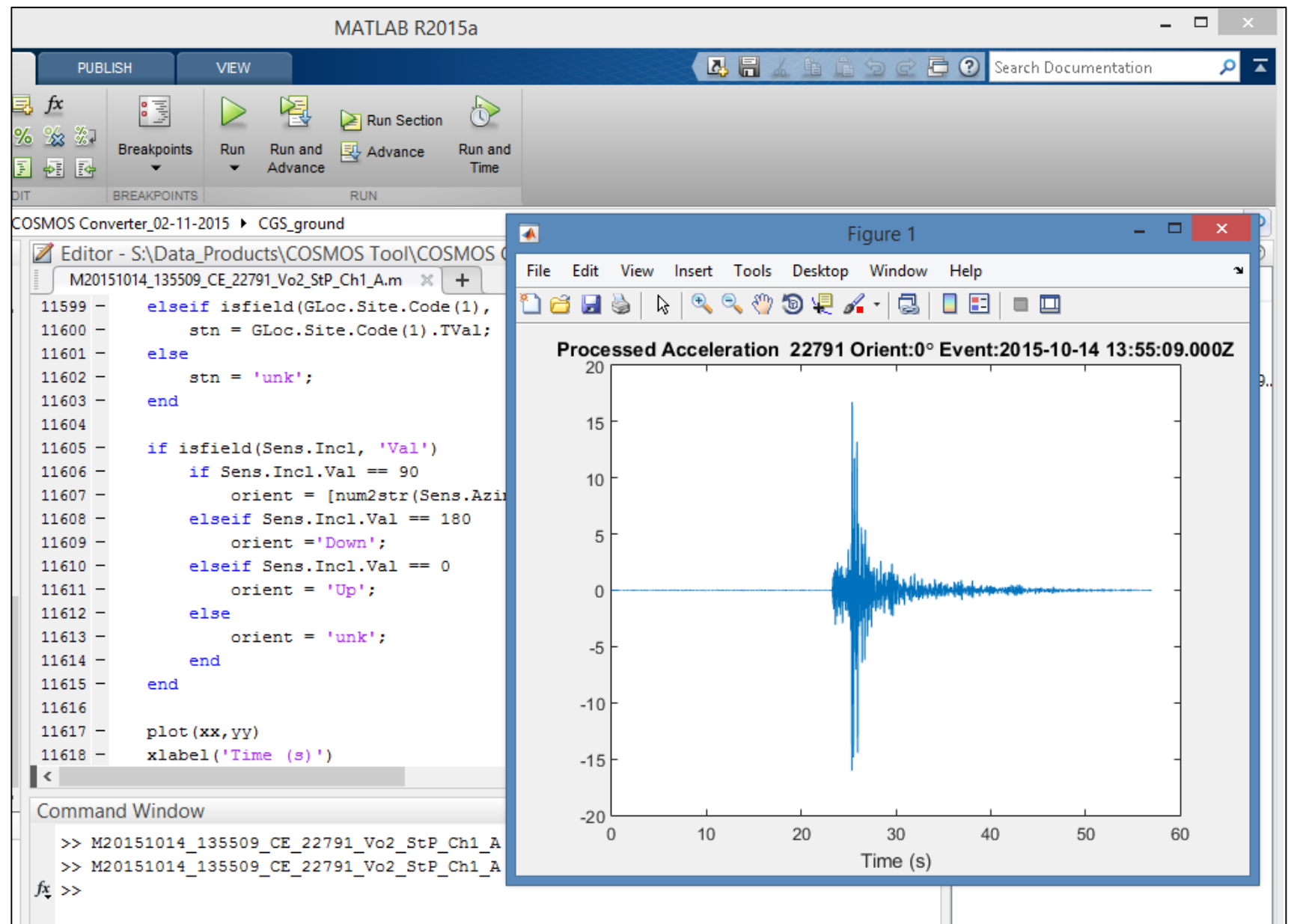
# Output: Tagged-Format Files

```
0 10 20 30 40 50 60 70 80
88 DataSeries.AriasIntensity_dbl = NULL m/s;
89 DataSeries.Duration.Over5PctG_dbl = 0.005 s;
90 DataSeries.Duration.AriasInterval5To95Pct_dbl = NULL s;
91 Processing.DateTime_txt = "2015-10-14";
92 Processing.Agency_txt = "CE";
93 Processing.Filter(1).FilterName_txt = "Cosine Bell";
94 Processing.Filter(1).FrequencyBandType_txt = "Low Pass";
95 Processing.Filter(1).OtherDescription.Corner(1)_dbl = 40.0 Hz;
96 Processing.Filter(2).FilterName_txt = "Cosine Bell";
97 Processing.Filter(2).FrequencyBandType_txt = "High Pass";
98 Processing.Filter(2).OtherDescription.Corner(1)_dbl = 0.3 Hz;
99 Processing.Resampling.InitialSamplingRate_dbl = 200.0 Hz;
100 Processing.Resampling.FinalSamplingRate_dbl = 200.0 Hz;
101 RawSeries.Mean_dbl = 10.594410 cm/s/s;
102 Processing.InitialValue.Displacement_dbl = -67114.09395973154 cm;
103 Processing.Problem(1).Status_txt = "None";
104 Processing.BlueBookVolume_int = 2;
105 Processing.Stage_txt = "Preliminary";
106 Processing.HumanReview_txt = NULL;
107 Processing.Instance_int = 1;
108 DataSeries.NumberOfSamples_int = 11400;
109 DataSeries.OrdinateUnits(1)_txt = "cm/s/s";
110 DataSeries.OrdinateFormat(1)_txt = "F10.6";
111 DataSeries.DataSeriesValues_txt = {
112 0.000158
113 0.000160
114 0.000161
115 0.000161
116 0.000161
117 0.000162
118 0.000166
119 0.000171
120 0.000173
121 0.000172
```

# Output: XML Format Files

```
166         <Period uom="s">0.2</Period>
167         <StructureDamping>5</StructureDamping>
168         <Value uom="g_standard">NULL</Value>
169     </Sa>
170 <Sa>
171     <Period uom="s">0.3</Period>
172     <StructureDamping>5</StructureDamping>
173     <Value uom="g_standard">NULL</Value>
174 </Sa>
175 <Sa>
176     <Period uom="s">1</Period>
177     <StructureDamping>5</StructureDamping>
178     <Value uom="g_standard">NULL</Value>
179 </Sa>
180 <Sa>
181     <Period uom="s">3</Period>
182     <StructureDamping>5</StructureDamping>
183     <Value uom="g_standard">NULL</Value>
184 </Sa>
185 <CAV uom="m/s">0.0050636</CAV>
186 <SI uom="cm">NULL</SI>
187 <AriasIntensity uom="m/s">NULL</AriasIntensity>
188 <Duration>
189     <Over5PctG uom="s">0.005</Over5PctG>
190     <AriasInterval5To95Pct uom="s">NULL</AriasInterval5To95Pct>
191 </Duration>
192 <DataSeriesValues>
193 0.000158
194 0.000160
195 0.000161
196 0.000161
197 0.000161
198 0.000162
199 0.000166
```

# Output: MatLab Files



Download COSMOS Converter from:

COSMOS website:

[www.cosmos-eq.org/VDC/index.html](http://www.cosmos-eq.org/VDC/index.html)

CESMD website:

[www.strongmotioncenter.org/COSMOSConverter.htm](http://www.strongmotioncenter.org/COSMOSConverter.htm)

# New Projects Funded by COSMOS:

- Add three input data formats to the converter tool:
  - Department of Civil Engineering, University of Chile (RENADIC)
  - Chile National Seismological Center (CSN)
  - Taiwan Central Weather Bureau (CWB)
- Complete the tool to handle input data in COSMOS Vers1.2 (text) format
- The updated COSMOS tool is anticipated to be released in the springs 2017

# Recently added data to the CESMD VDC/EDC

7.8Mw, NZL, 13 Nov 2016

6.5Mw, NZL, 14 Nov 2016

6.6Mw, Italy, 30 Oct 2016

## STRONG-MOTION VIRTUAL DATA CENTER (VDC)

Global Component of the Center for Engineering Strong Motion Data

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Amberley NewZealand 2016-11-13 11:02:56 UTC

**Region:** New Zealand  
**Latitude:** -42.7570  
**Longitude:** 173.0770  
**Depth:** 23.0 km  
**Mw:** 7.8

[References](#)

Jump within page to:

[ Choose a Station ]

Add all data on this page to the download bin

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Glyn Wye

Hypocentral dist: 54.9 km

GNS station GLWS

Processing by: GNS

Data Available: corrected acceleration, velocity, displacement, & spectra

[Summary Page for this Station](#)

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Spectra: [Log](#)

[Lin](#)

Add all of this station's data to the download bin

Instrument #  Add this instrument's data to the download bin

Component: 0    PGA (cm/s/s): -129.72    PGV (cm/s): -7.63     Add this to bin

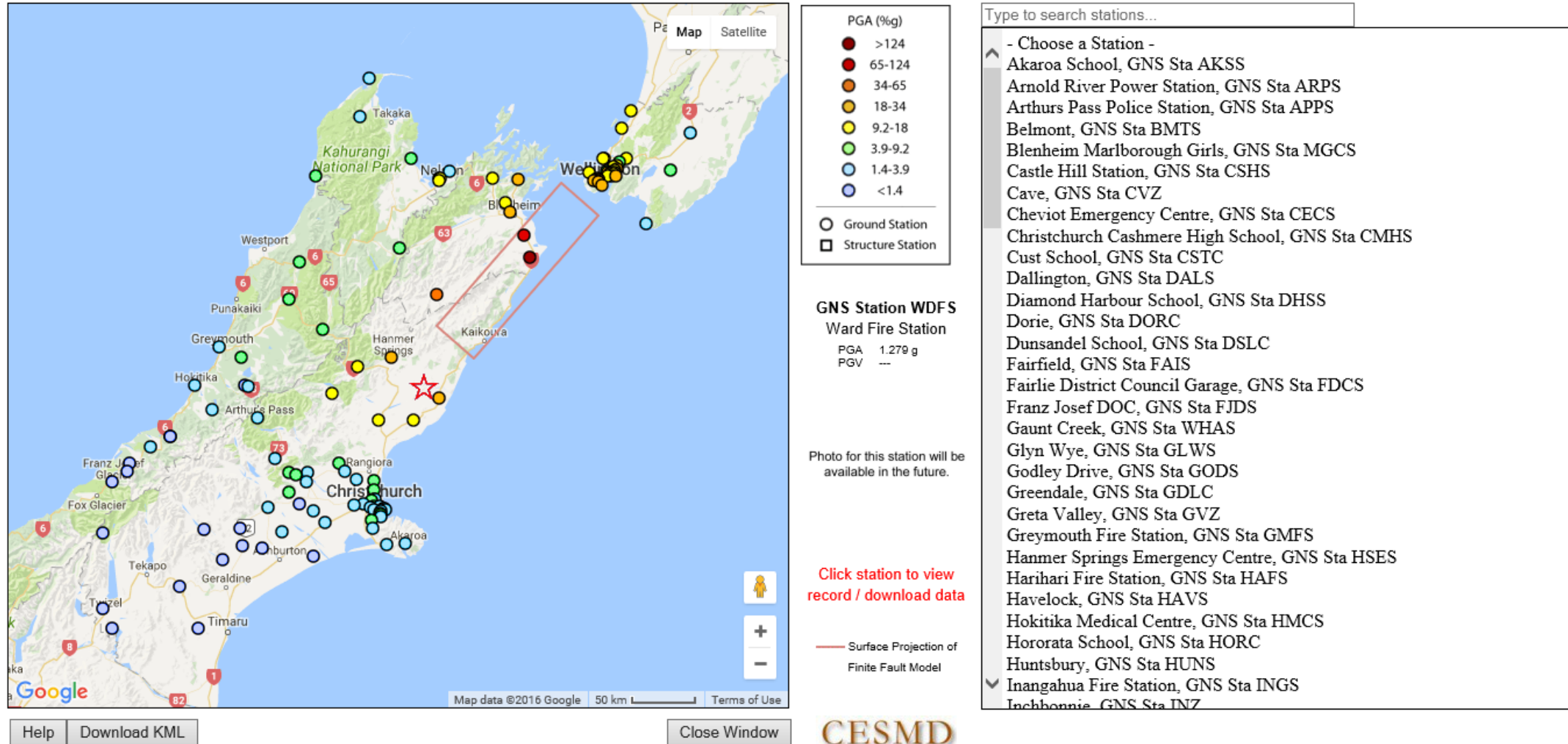
Instrument #  Add this instrument's data to the download bin

Component: 270    PGA (cm/s/s): -145.11    PGV (cm/s): 17.63     Add this to bin

Instrument #  Add this instrument's data to the download bin

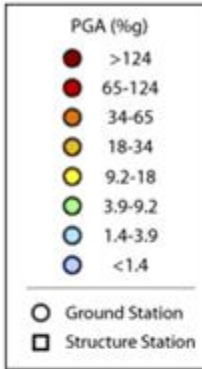
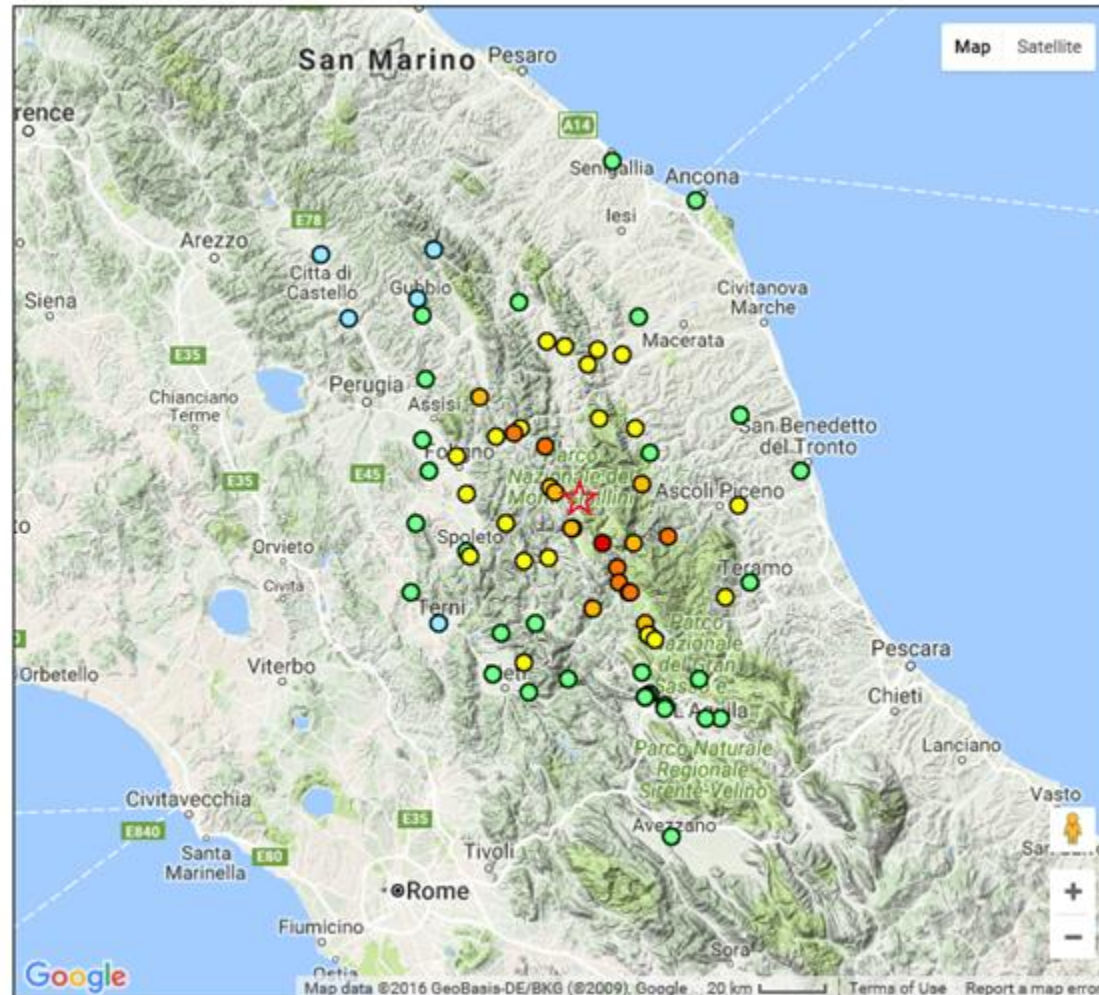
Component: 360    PGA (cm/s/s): 166.53    PGV (cm/s): 17.97     Add this to bin

# 7.8Mw New Zealand Earthquake of 13 Nov 2016





# 6.6Mw Italy Earthquake of 30 Oct 2016



Hover over station to reveal station number and photo.

Note: Station locations are approximate when viewed at high zoom levels.

Click station to view record / download data

Type to search stations...

- Choose a Station -
- (N/A), RAN Sta SPO1
- (N/A), RAN Sta TRN1
- 0MBT, RAN Sta 0MBT
- 0UM8, RAN Sta 0UM8
- Accumoli, RAN Sta ACC
- Acquasanta Terme, RAN Sta ACT
- Amandola - Campo sportivo, INGV Sta AM05
- AMATRICE, RAN Sta AMT
- ANCONA 2, RAN Sta ANB
- ANTRODOCO, RAN Sta ANT
- AQUIL PARK ING., RAN Sta AQK
- AQUILA CASTELLO, INGV Sta AQU
- Ascoli Piceno, RAN Sta ASP
- AVEZZANO, RAN Sta AVZ
- BARISCIANO, RAN Sta BRS
- BEVAGNA, RAN Sta BVG
- Cantiano, RAN Sta 0CAN
- CASCIA, RAN Sta CSC
- CASTELNUOVO (ASSISI), RAN Sta CSA
- Castelvecchio, INGV Sta T1216
- CIT, RAN Sta CIT
- CITTADUCALE, RAN Sta CTD
- COLFIORITO, RAN Sta CLF
- Domo (RI), INGV Sta T1201
- FABRIANO, RAN Sta FBR
- FOLIGNO SEGGIO, RAN Sta FOS
- FOLIGNO-CFD-UMBR, RAN Sta FOC
- FOPC, RAN Sta FOPC
- Forca Canapine, RAN Sta FCC
- Gagliole, INGV Sta GAG1
- GBC, RAN Sta GBC

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