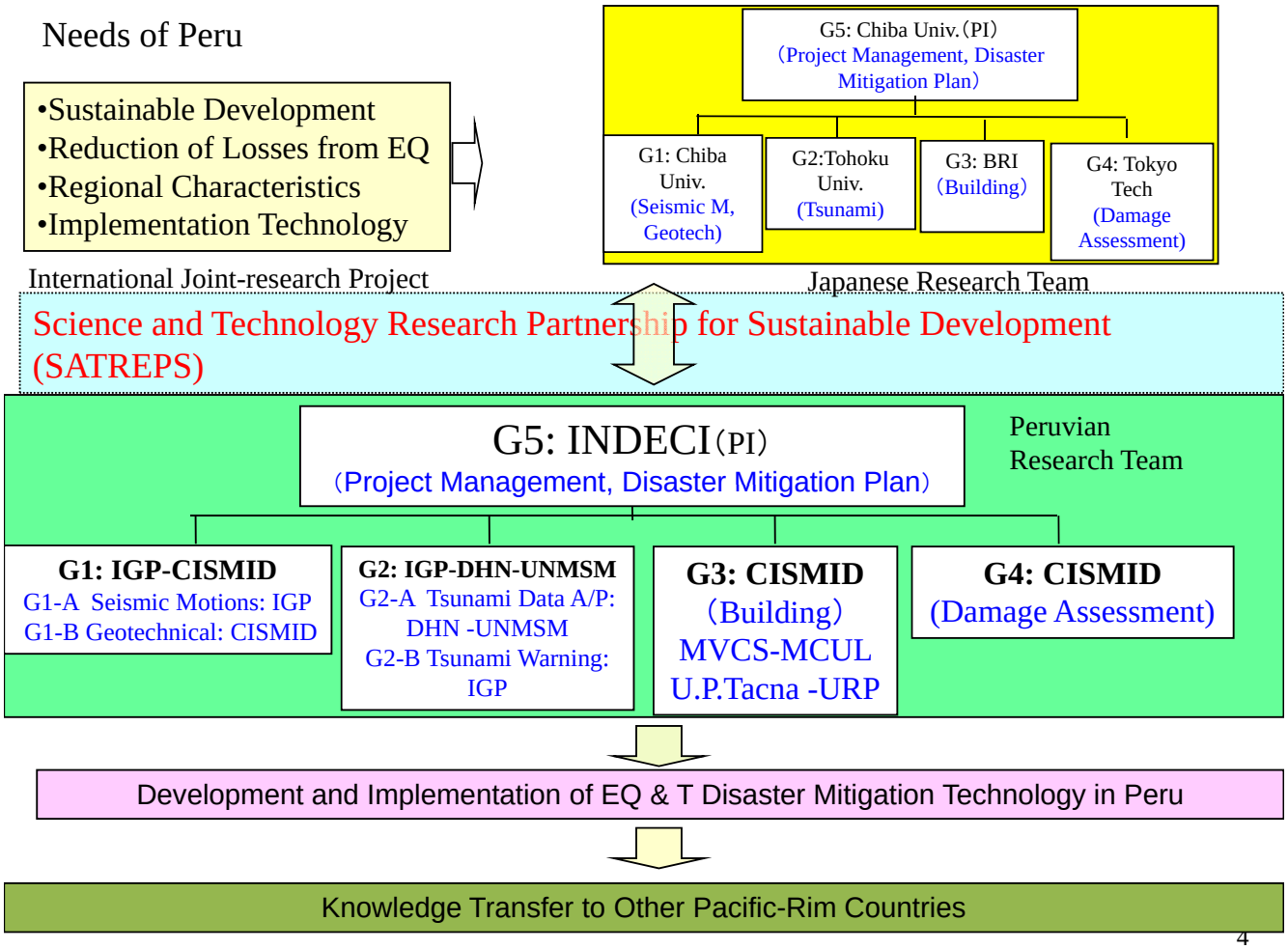
Project Report
Science and Technology Research Partnership for Sustainable Development (**SATREPS**)

Carlos Zavala



2010 Activities

Group G1 – Seismic Motions and Geotechnical

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Training Course on Evaluation Technologies for Seismology (G1) and Tsunamis(G2) (IGP-DHN-UNMSM-UNI)

Purpose: Exchange of knowledge on evaluation of seismic sources, seismic hazard and tsunami evaluation

RECEIVED EQUIPMENT

GROUP G1

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Sensor NETWORK modelo CV-374AV2
(Tokyo Sokushin Co. Ltd.)

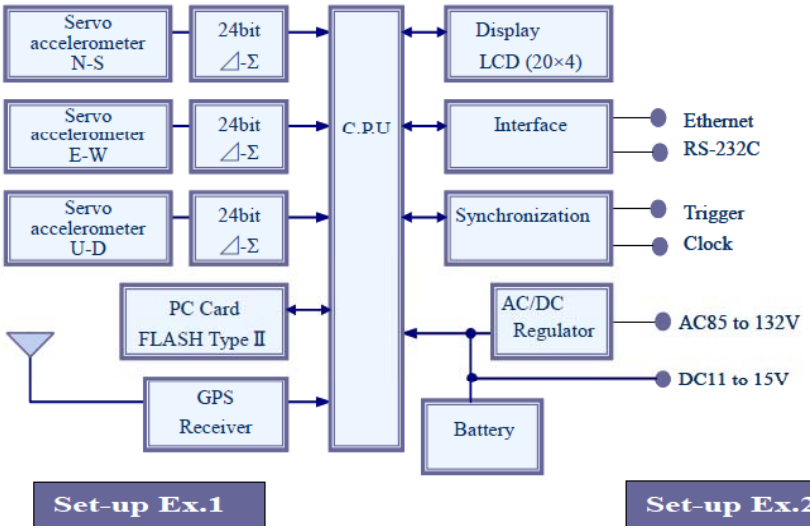
- Connect by single LAN cable including power and synchronization (CV-374B)

Built-in CF Card, GPS receiver

Continuous record

Dimension (built-in sensor)
180mm×120mm×100mm
＊Photo. CV-374A

Network Seismocorder CV-575



"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

GEODAS 15-HS (Buttan Service)

VILLA EL SALVADOR: (01/09/2010)

GEODAS-15 HS equipment

Linear arrangement 0.5m

Linear arrangement of sensors with separation of 0.5m and 2.0m . Also data acquisition system is setting and finally the personal is generating the superficial waves

Linear arrangement of 2.0m

RESERVA PARK: (03/09/2010)

Linear arrangement of 0.5m.

Linear arrangement setting a distance between sensors of 0.5 & 2.0 m. was performed. Also generation waves was performed by the staff and signal acquisition were performed

Linear arrangement of 2.0m.

UNALM-METEOROLYCAL STATION: (07/09/2010)

GEODAS-15 HS equipment

Linear agreement 0.5m

Configuration of data acquisition system for capture signals were performed, with a linear arrangement with separation between sensors of 0.5 and 2.0 m.

Linear arrengement 2.0m

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Activities 2010
Group G2

Tsunami (size, impact, counter measures)

Activities during 2010

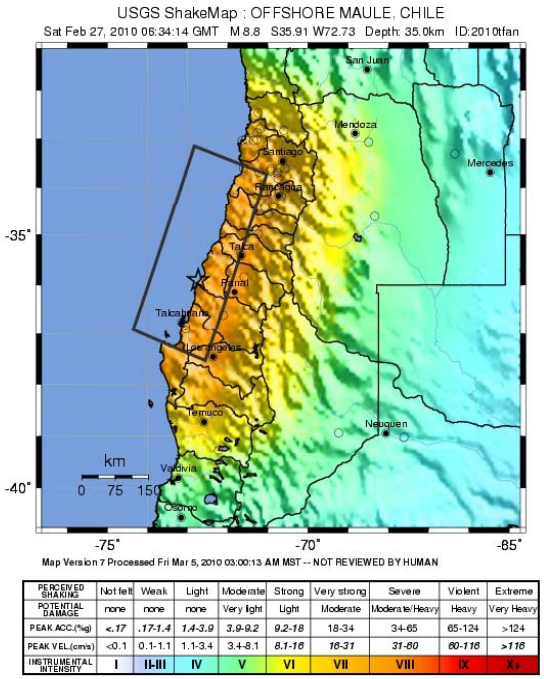
- Training course for Peruvian researchers to estimate inundation pattern and tsunami parameters.
- Long Term Training Stage for Eng. Cesar Jimenez of DHN at Tohoku University.
- Purchase of 2 Workstations
- Coordination meetings with Japanese Experts

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Activities 2010
Group G3

Building (current state, enhance building resistance)

Field Survey to Chile



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Moderate/Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	*<.17*	*.17-1.4*	*1.4-3.9*	*3.9-9.2*	*9.2-18*	18-34	34-65	65-124	>124
PEAK VEL.(cm/s)	<0.1	0.1-1.1	1.1-3.4	3.4-8.1	*8.1-16*	*16-31*	*31-60*	*60-116*	*>116*
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

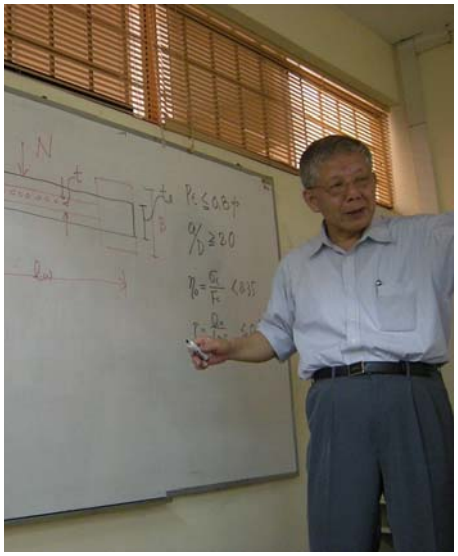
Visited Buildings

Base Isolation Building
Build by National University
Of Chile

Japanese G3 Mission visit Lima Buildings

Japanese G3 Mission visit Tacna Buildings (February 2011)

Course of Behavior of Concrete Elements by Professor Shunsuke Sugano at CISMID



"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

EQUIPMENT FOR GROUP 3 (Arrival to Lima May 2011)

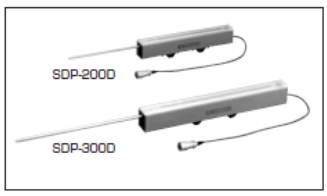
UTM Controller
CTM Controller

Sistema Digital
Data Adquisition

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

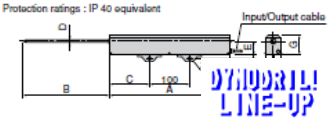
DISPLACEMENT TRANSDUCERS

SDP-D Displacement Transducer 200/300mm



The SDP-D displacement transducer is an axial-type transducer with a measuring range of 200 mm or 300 mm. The strain gauge-type design makes this transducer free of the noise generated by a strain gauge with sliding electrical contact points. Taking advantage of the stroke of the axial part, it can measure a large amount of displacement and make stable measurement over a long period of time. As it is provided with graduations, alignment work can be done easily.

Protection ratings : IP 40 equivalent



■Specifications

Type	SDP-200D	SDP-300D
Capacity	200mm	300mm
Rated Output	5mV/V (10000×10⁻⁶ strain) ±0.3%	
Sensitivity	50×10⁻⁶ strain/mm	33×10⁻⁶ strain/mm
Non-linearity	0.3%RO	
Spring force	5.9N	7.4N
Frequency response	2Hz	1.5Hz
Temperature range	0—+60℃	
Input/output resistance	350Ω	
Recommended exciting voltage	Less than 2V	
Allowable exciting voltage	10V	
Weight	900g	1200g

Supplied cable : CT6-4V10/NJ-STB (φ6mm 0.3mm² 4-core shielded vinyl cable 10m)

DYMODRILL LINE-UP

[MAIN MENU]

Light Class Models

Medium Class Models

Heavy Duty Class Models

Hydraulic Dymodrill

SHIBUYA DYMODRILL

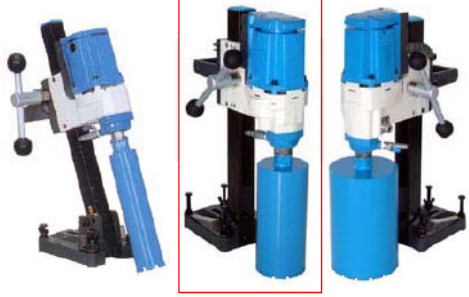
LIGHT CLASS MODELS

for PERU

TS-092(AB42) w/R1011 MOTOR

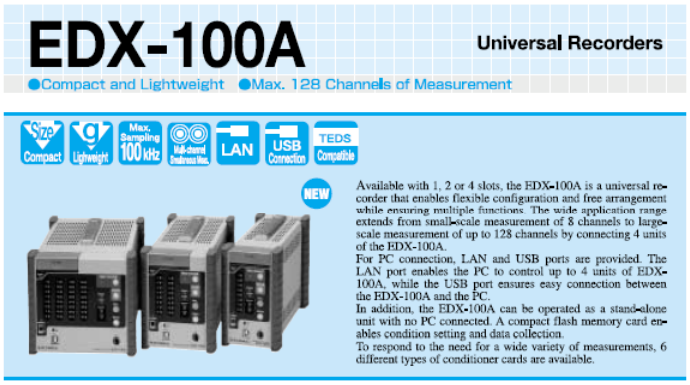
TS-132 w/R1511 MOTOR

TS-162 w/R1521/R1522 MOTOR



JST-JICA Science and Technology Research Partnership for Sustainable Development
The 2nd Japan-Peru Workshop on Enhancement of Earthquake and Tsunami Disaster Mitigation Technology
Zavala C. – CISMID/FIC/UNI

Sensores Laser

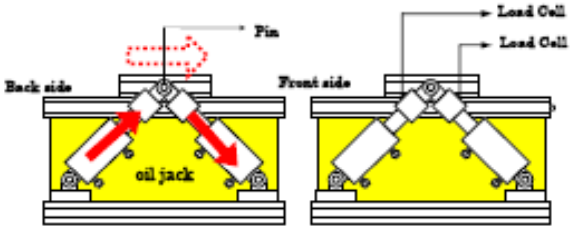


Sistema de Adquisición LAN+USB

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

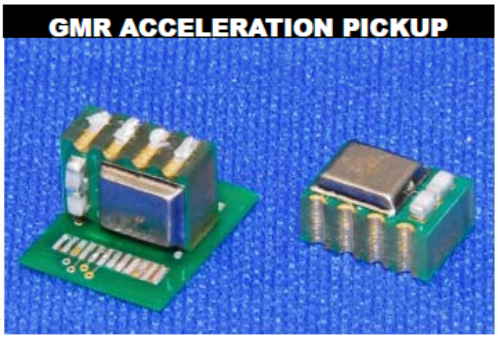
New Portable Jack System

1. Hydraulic oil jack system



IT strong motion seismograph **ITK-002**

ITK (IT strong motion seismograph) sensor is a cheap strong motion seismograph designed for examining actually how a familiar place shakes at the usual small earthquake, designed searching for the weak point and aiming to do an effective earthquake-proof measures. The ITK sensor keeps continuously observing for 24 hours, and sending data to the ITK station installed in PC and the built-in equipment by way of the network.



GMR (giant magneto resistance effect) newly developed sensor is adopted in the acceleration pickup. The acceleration detection of high accuracy was achieved at a low price.

Activities 2010
Group G4

Damage assessment (geo-spatial inventory, damage assessment methodologies, simulate earthquake scenarios)

2010 Activities Summary

- Visit of Japanese Expert for field survey
- Purchase Survey equipment (Digital Cameras, GPS)
- Purchase of Software for DATA processing
- Purchase High Resolution Lima Satellite Images
- Study Trip to Maule Region after 2010 Chile quake
- Purchase of 2 Workstations

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Objectives of Group 04

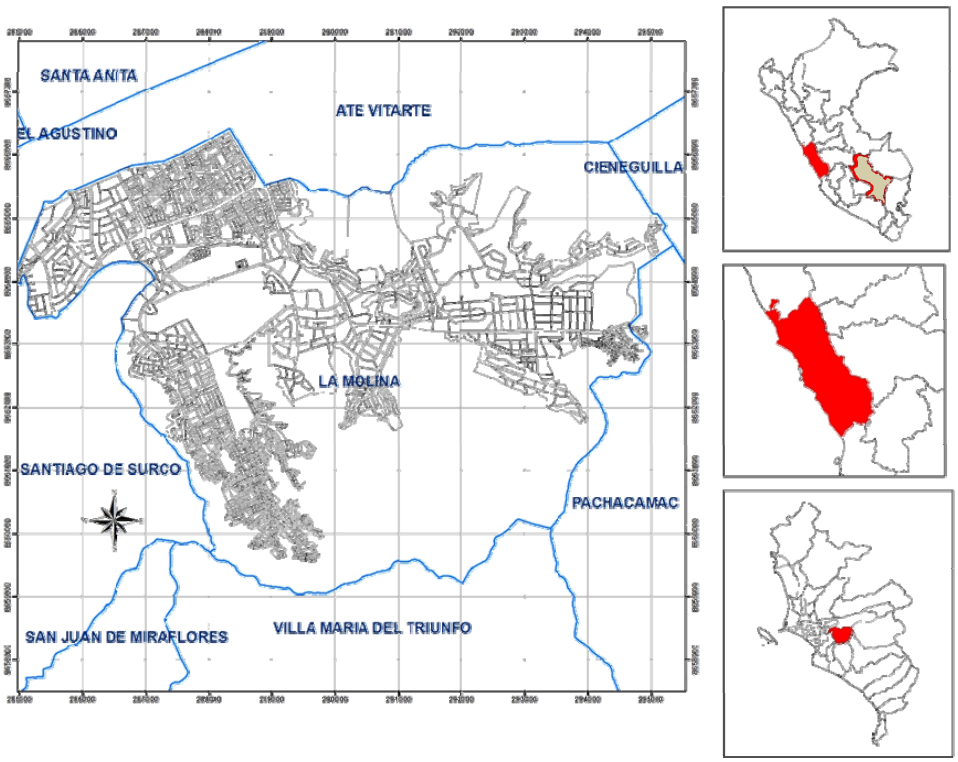
- Development of Building Inventory
- Development Geo-Spatial Database
- Carry out Data Integration (Geotechnical, Structure, Tsunami, Buildings)
- Damage Simulations (Earthquake and Tsunami)
- Earthquake Scenario of Seismic Risk Assessment
- Damage Assessments Methodologies
- Internet Based System for Data Dissemination

Measure the Social Vulnerability (Investigation on La Molina District – Lima)

- From satellite images the social class of the residents and then infer the quality of housing
- Satellite information contains not only image but spectral information that can be processed
- Spectral information can be used to solve this issue

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Focus Area – La Molina District - Lima



Different types of land use

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

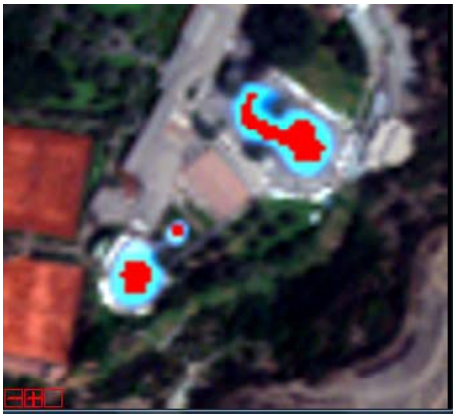
Different types of land use

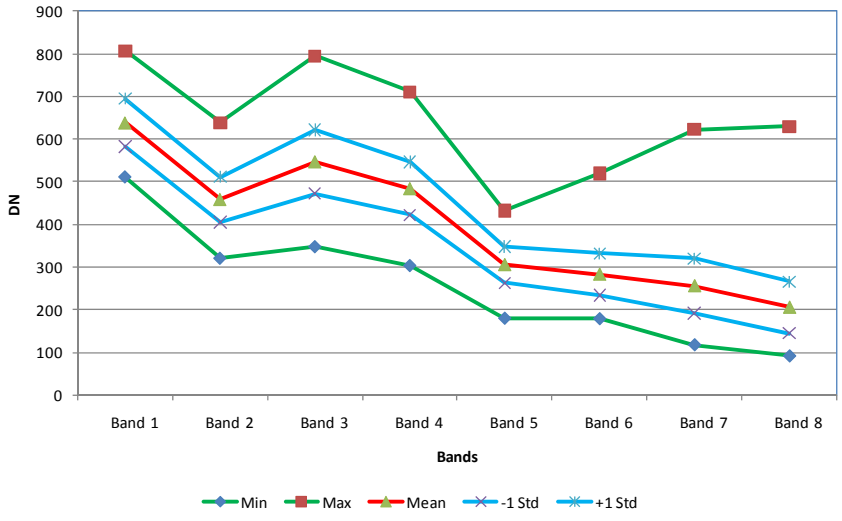
Different types of land use

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

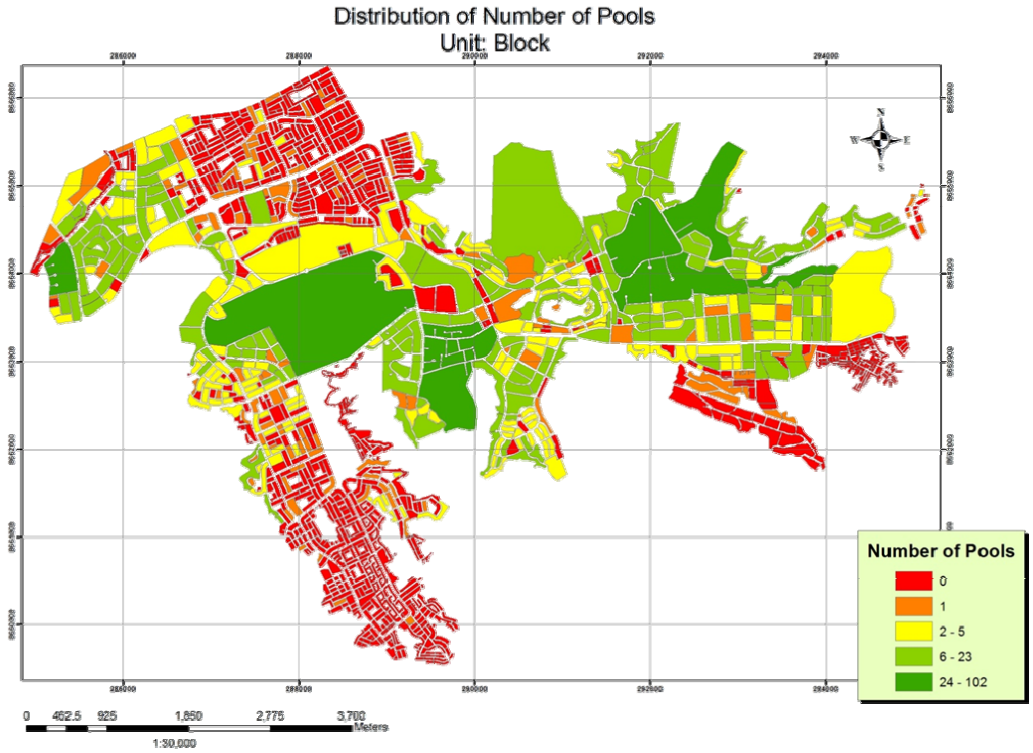
Supervised Classification

Supervised Digital Image Classification: Training area + Classification Method



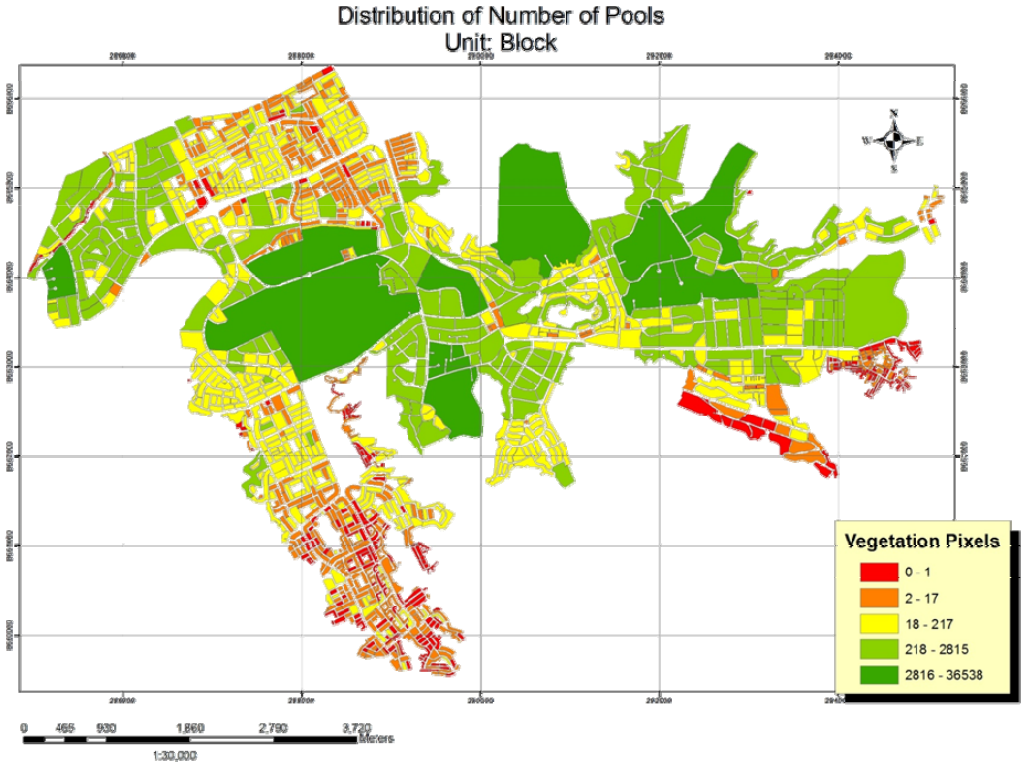


Transfer raster data to vector data (GIS)



"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Same procedure for NDVI (from raster to vector)



JST-JICA Science and Technology Research Partnership for Sustainable Development
The 2nd Japan-Peru Workshop on Enhancement of Earthquake and Tsunami Disaster Mitigation Technology
Zavala C. – CISMID/FIC/UNI

Activities 2010
Group G5

Planning
(development disaster mitigation plans)

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

1st Workshop Lima Marzo 2010

2010 Workshop Sessions

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

2010 Workshop Key Sessions

Presentation of the Project under the Natural Disaster Committee of the Peruvian Congress

"Research on natural disaster prevention measures attuned to the needs of developing countries"
Enhancement of Earthquake and Tsunami Disaster Mitigation Technology in Peru

Peruvian Congress Disaster Mitigation Seminar on 2010

Sulpaa
Gracias
ありがと