# Progress of Landside Impermeable Wall freezing: Phase 2 of the first stage



- OThe purpose of the Landside Impermeable Wall construction lies not in freezing soil to form an underground wall but in keeping groundwater from flowing into the reactor/turbine buildings and preventing new contaminated water from being generated.
- OBy closing less than 95 percent of the mountain side of the Landside Impermeable Wall in Phase 2 of the first stage, it is expected that the amount of groundwater flowing into the areas around the reactor/turbine buildings will be reduced. This will help keep groundwater from being contaminated during the first stage.
- OThroughout the first stage, how freezing of the Landside Impermeable Wall has progressed will be checked by monitoring the difference in groundwater levels inside and outside of the wall and the amount of groundwater pumped up by the subdrain and groundwater drain systems and the well point system.

Changes in soil temperatures over time

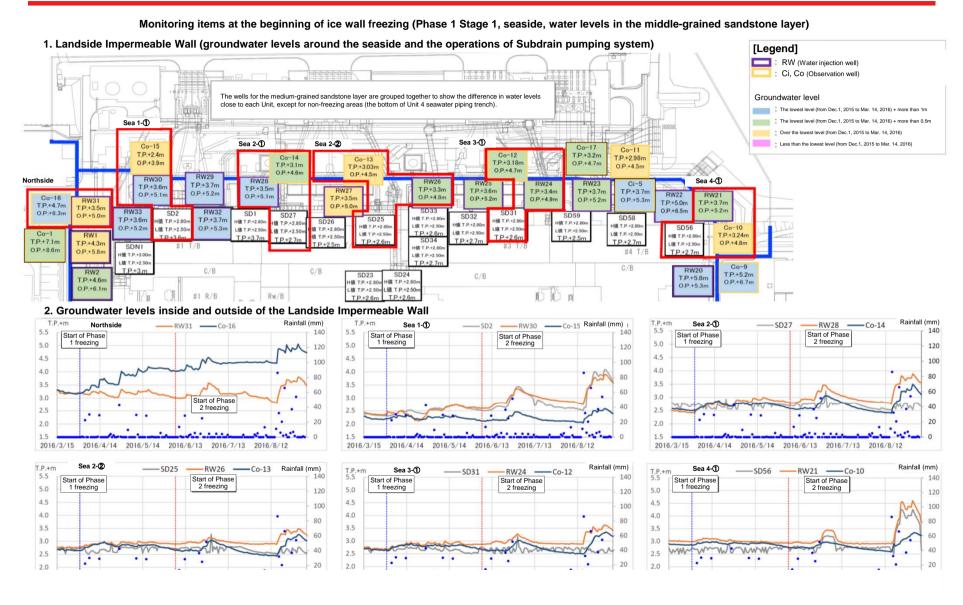
- Average Soil Temperature (AST) of medium-grained sandstone layer (blue line): average value of thermometer temperatures measured at 1m intervals except for the areas
- between ground surface and Ground Level 2m and the areas around the first muddy layer boarder
- Average Soil Temperature (AST) of alternating strata layer (red line):
- Average value of thermometer temperatures measured at 1m intervals except for the areas around the upper and lower parts of the alternating layer boarder.



#### Landside Impermeable Wall Freezing Progress Report: Soil Temperatures (Temperatures In Thermometer Pipes) (Ac of September 8, 2018 at 7 a.m.) Phase 2 80-409 Medium graineti sandrinen layen \*SET (CE-F700 Eller sering stocks layen \*SET (CE-F700 410-43 Medium grained contribute layers 1887 (427/1920) Medium grained sanddown book 1447 (44.370) 193-419 Median grained sanitations legen "ART | 12.8 "CO Abbreviating mode layers "ART | 12 "CO "Objects by Artist and and decreased on pipe Nilson Alternating stocks layer "WIT 0.27 A 700 \*Brigary left frame will and the respective plant Clares Medium grained sandrione layer: "AST ( 45700 Alternating strate layer: "AST ) 45.0700 Million making retracts beginn: "AST ( 6.6.9 TER) After eating strate layer: "AST | 4.5.2703 Afternating strate layer: "ART 1:44.7"00 "Biotena le/erimen nell'antitinamentation pipe Miller -80 -10 -17 93-88 93-88 Alternating strate layer 1977 (1994) 100 Character for boson of antidentoming sign Spinor Alternating steads layer "WIT OF TOP \*Obtavor billy frame sail and these 20 -17 -20 2 Medium grained variables a layer \*AST (46.6700 After sating strate layer: \*AST (4700 Medium grained sarabte or layer \*85T (4.5**788** Elementing strate layer \*86T (46.6**788 #18/9** 130-69 and freezing areas after Phase 2 Thermometer pipes for Phase 1 Thermometer pipes for Phase 2 12 6 11 Medium grained sandstone layer \*WT (42.7700 Elimenting strate layer \*WT (42.6700 7 19-8 Alternating strate layer "ACT (ALATO) 9 Alternating streta layers NET | 111.2700 \*Distance life from sell and the recently pipe 827m "Olders higher bosons and anoth becomes the pipe \$75 cm "Strianer by with some soil and the recovering pipe (6) -10 Hedium grained sandstone layer: "MIT ) 11.0700 Medium grained ramitions layer: "ART | Alternating strata layer: "ART | 48.2700 Alternating strate layer SAST (APPEN Afternating strate layer: "AST )-4-5700 "Obtain a labe house, and problem moments place \$52 m. -87

(in the medium-grained sandstone layer 1 on the seaside)





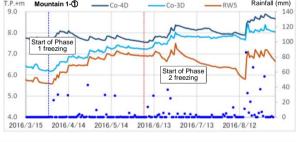
(in the medium-grained sandstone layer 2 on the landside)

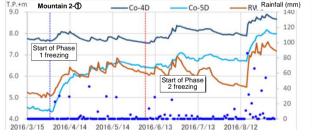


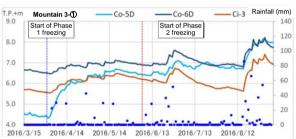
Monitoring items at the beginning of ice wall freezing (Phase 1 Stage 1, seaside, water levels in the middle-grained sandstone layer)

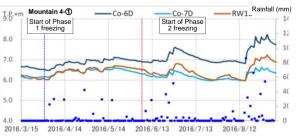
3. Landside Impermeable Wall (groundwater levels around the seaside and the operations of Subdrain pumping system) [Legend] The wells for the medium-grained sandstone layer are grouped together to H値 T.P.+2.8 L值 T.P.+2.50 include two wells outside the non-freezing area and one well inside, for RW (Water injection well) MTP+250 HIST D +2 80-T.P.+2.6m each Unit. I 借 T P +2 50e T.P.+5.8r Ci, Co (Medium-grained sandstone layer) T.P.+2.7m SD8 #1 T/B H值 T.P.+2.8 SD51 SD21 L值 T.P.+2.50 SDN15 SDN3 C/B 值 T.P.+2.5 Groundwater level L值 T.P.+2.50r 485 T D +2 00 SD40 TP+6.5 TP+52m SDN14 L值 T.P.+2.50 L值 T.P.+2.50 H值 T.P.+2.80 Landside Subdrain the lowest level + more than 2m (値 TP+30 H値 T.P.+3.0 SD20 SDN13 L值 T.P.+2.50 (株 T D +2 50 1 andside Subdrain the lowest level + more than 1m HIST D +2 8 L値 TP.+2.56 H信 TP+3.0 L值 T.P.+2.50 · 值 T.P.+3.0 L值 T.P.+2.50 T.P.+6.6n L値 T.P.+2.5 Landside Subdrain over the lowest level T.P.+6.8r #3 R/B L值 T.P.+2.50 TD+63 T.P.+6.3n OP+83 SDN5 Landside Subdrain less than the lowest level O.P.+7.9n SD45 SDN12 SDN11 SD19 H値 TP+3.00 SDN8 RW18 H値 T.P.+3.00 L值 TP+250 SDN9 SDN10 T.P.+6.4n Co-8 T.P.+7.0m T.P.+7.6m Ci-4 H值 T.P.+3.00 HM T P +3.00 O.P.+8.0m TP+67m O.P.+9.1m TP+6.6m L值 T.P.+2.50 TP+64m L值 T.P.+2.50e O.P.+8.1m O.P.+7.9m TP+72m T.P.+7.9m RW16 T.P.+6.5m TP+6.7m T.P.+7.2m **RW13** O.P.+8.7m T.P.+6.9m O.P.+8.0n T.P.+6.8r O.P.+8.8m TP+71m O.P.+8.3n O.P.+8.6n TP+73m T.P.+6.3m TP+80m T.P.+8.7m Ci-3 Co-6D O.P.+8.8n O.P.+7.9m O.P.+9.6m O.P.+10.2m TP+80m T.P.+6.9m T.P.+7.7m OP+95m O.P.+8.4m O.P.+9.3m Mountain 1-① Mountain 4-① Mountain 2-(1)

4. Groundwater levels inside and outside of the Landside Impermeable Wall

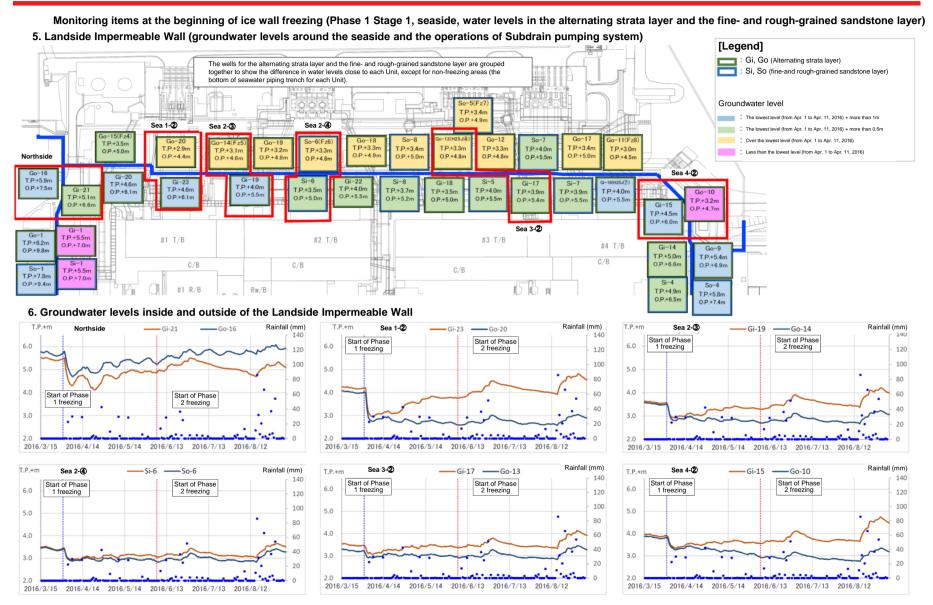






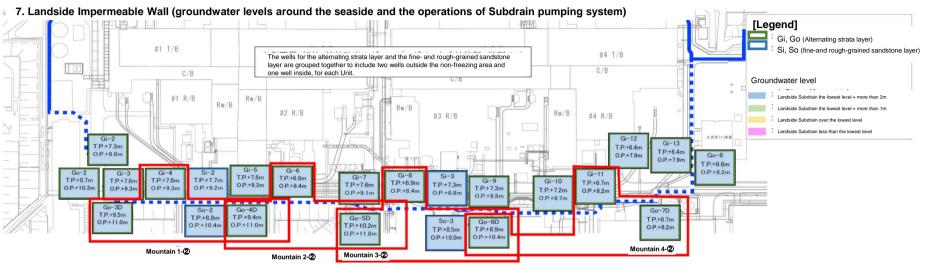


(in the alternating strata layer and the fine- and rough-grained sandstone layer 1 on the seaside)

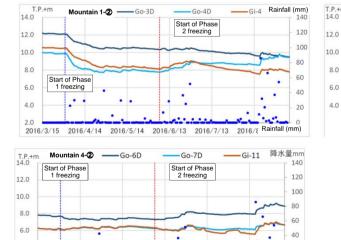


(in the alternating strata layer and the fine- and rough-grained sandstone layer 2 on the landsid) = PCO

Monitoring items at the beginning of ice wall freezing (Phase 1 Stage 1, seaside, water levels in the alternating strata layer and the fine- and rough-grained sandstone layer)

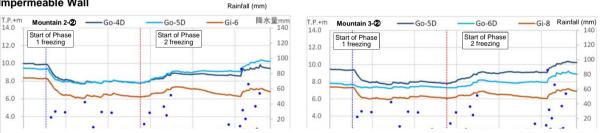


#### 8. Groundwater levels inside and outside of the Landside Impermeable Wall



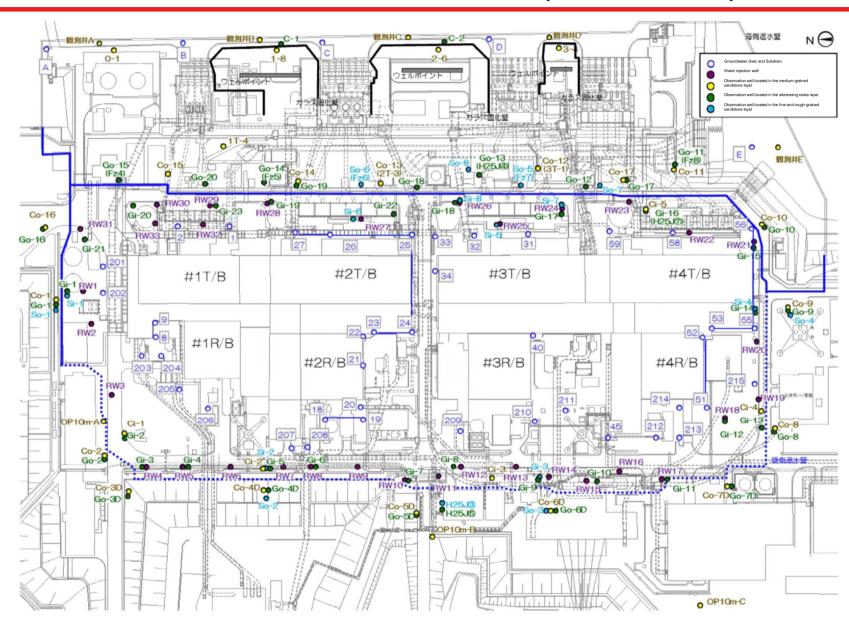
2016/3/15 2016/4/14 2016/5/14 2016/6/13 2016/7/13 2016/8/12

4.0

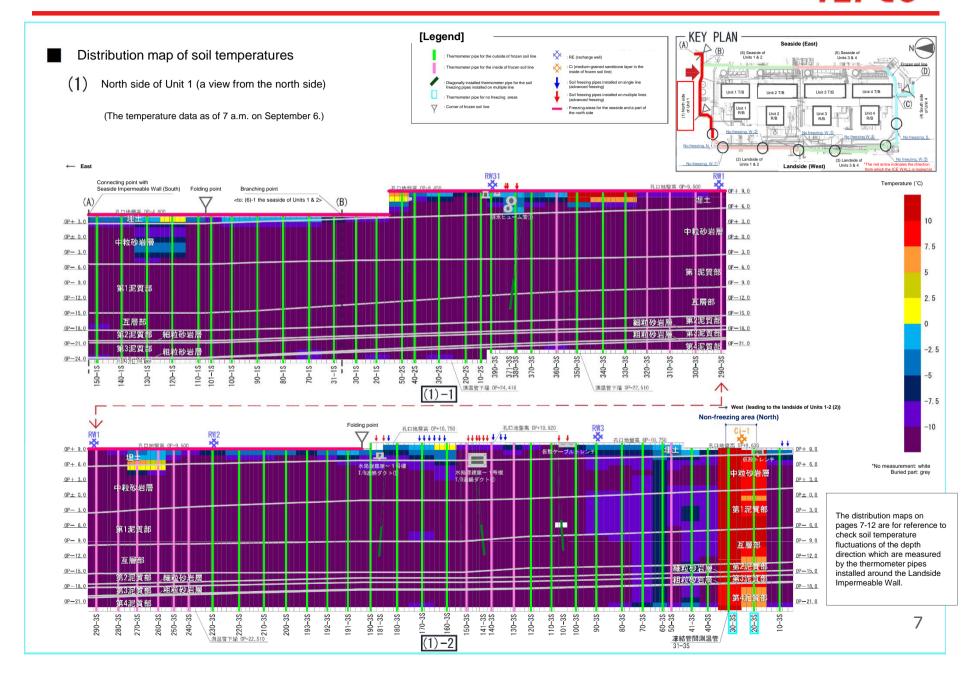


## [Reference] Location map of groundwater level observation wells (as of June 2016)

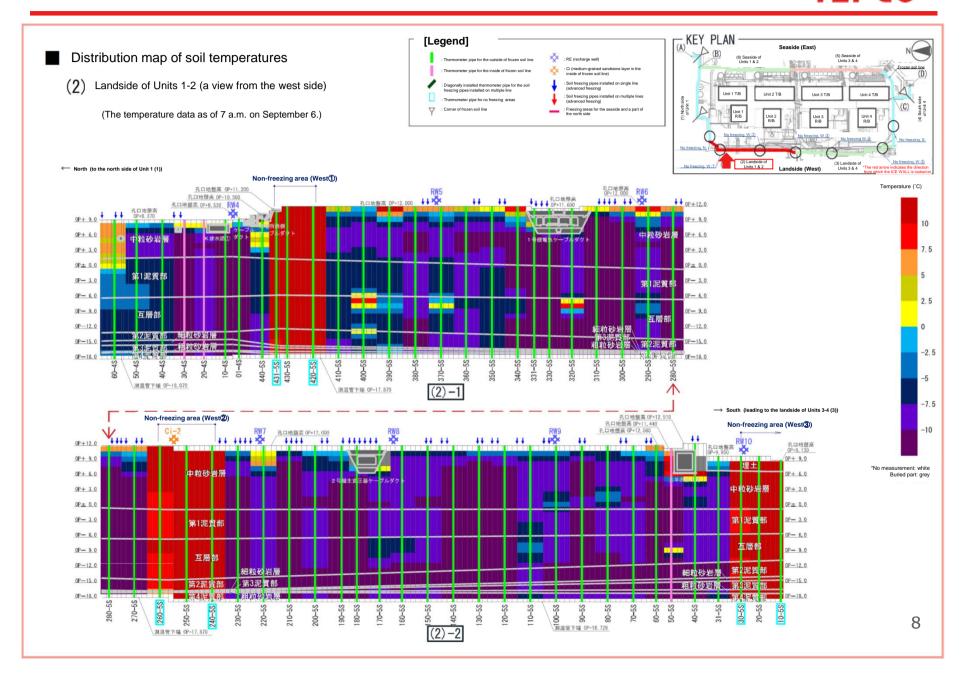




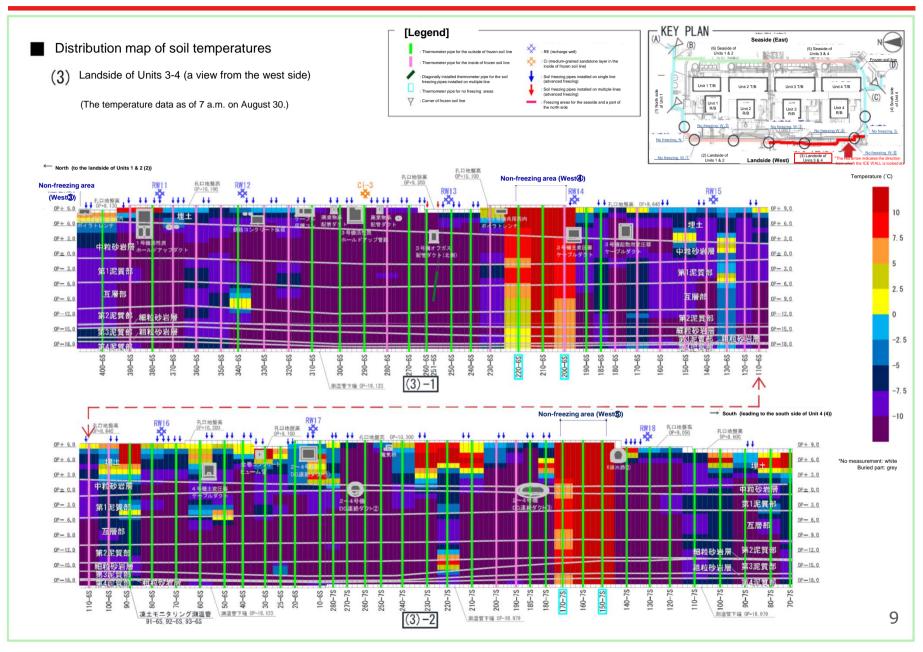
## [Reference] Distribution map of soil temperatures (north side of Unit 1) TEPCO



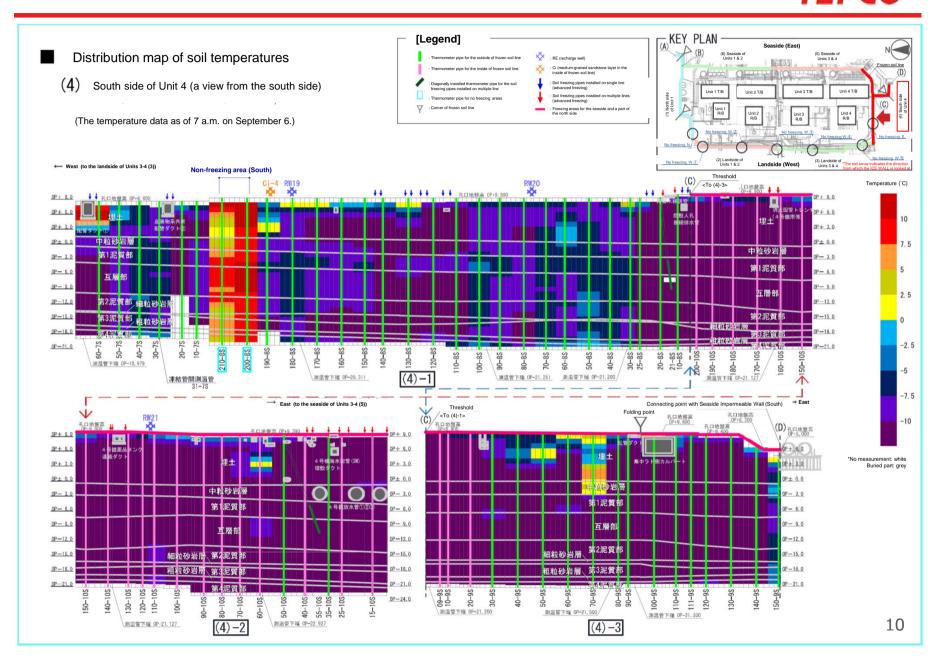
### [Reference] Distribution map of soil temperatures (west side of Units 1-2)



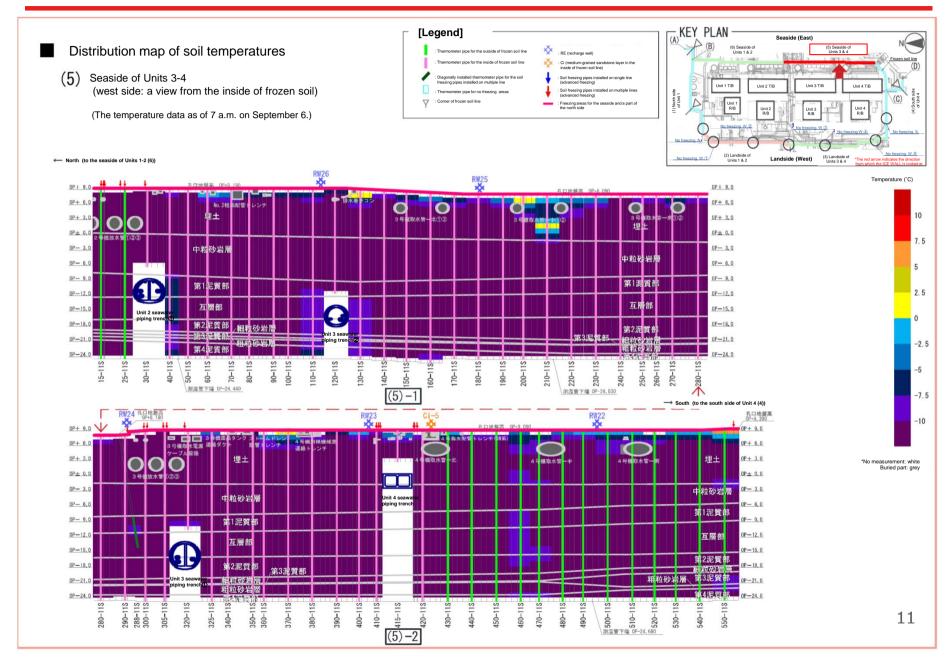
### [Reference] Distribution map of soil temperatures (west side of Units 3-4)=PCO



## [Reference] Distribution map of soil temperatures (south side of Unit 4)\_TEPCO



### [Reference] Distribution map of soil temperatures (east side of Units 3-47=PCO



### [Reference] Distribution map of soil temperature (east side of Units 1-2)

