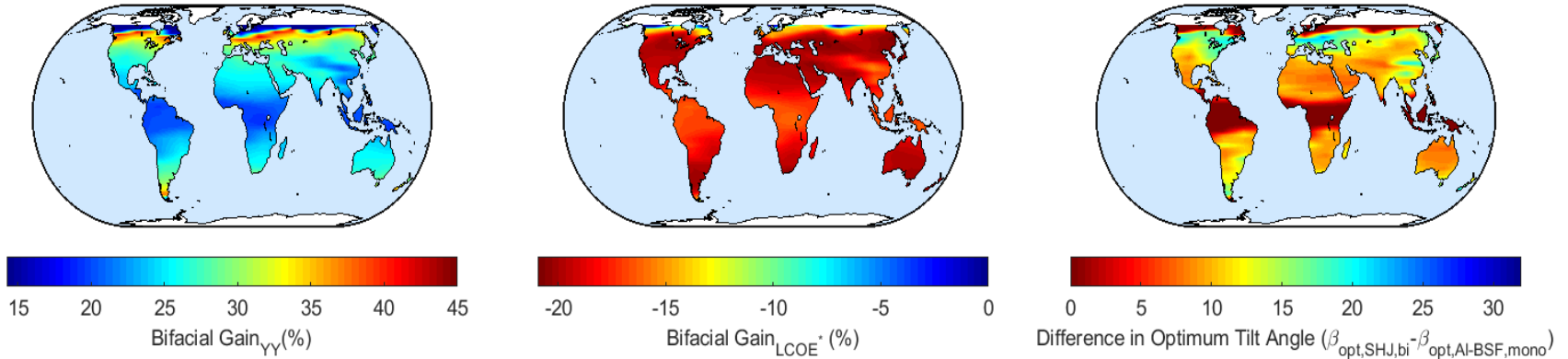


# Bifacial Photovoltaic Modules and Systems



## Experience and Results from International Research and Pilot Applications

- Bifacial photovoltaic cells, modules, and systems are **rapidly overtaking market shares** from monofacial PV technologies.



- Global maps comparing (left) bifacial gain, (center) LCOE, and (right) difference in optimum array tilt angle for Al-BSF monofacial vs. Si heterojunction bifacial PV modules.



## Experience and Results from International Research and Pilot Applications

- Bifacial cell and module innovations have led to new **optimized bifacial system designs**. Bifacial gain increases with albedo, diffuse fraction, array height, row spacing, and space between modules.
- **International standards** for module characterization as well as international electrical design and safety codes **are actively being reviewed** to account for bifacial PV technologies. Accurate bifacial module characterization is still a challenging task.
- **A bifacial PV yield modeling comparison** evaluated the state of the art of bifacial PV performance models. Volunteers from 13 different research and commercial entities participated, each with their own bifacial PV performance model.
- The report also presents a **summary of eleven bifacial field test sites** around the world along with examples of field results.