

**Position Title:** CE Specialist in Extreme Weather and Climate Resilience

**Developed and Proposed By:** This position was developed through consultation with internal and external stakeholders. Internal UC stakeholders include UCM, the Disaster Preparedness & Resilience PT, the Climate Science & Ecosystems Impacts PT, the Fruit & Nut Tree Crops PT, CIWR, IGIS, and faculty across UC campuses with applied climatology and resilience expertise. External stakeholders consulted include the California Department of Water Resources (DWR), California Department of Food and Agriculture (CDFA), the USDA California Climate Hub, the Almond Board of California and other commodity boards.

**Headquarter Location and Coverage Area:** This position will be stationed at UCM with statewide coverage. UCM is proposed as the headquarters for four converging reasons: (i) the campus hosts faculty with international leadership in applied climatology, extreme-weather attribution, and weather and climate decision-support tools; (ii) it anchors the USDA-funded Secure Water Future and a deep portfolio of climate, water, and ag-tech research that this position will leverage; (iii) it is centrally located in the San Joaquin Valley a region most acutely exposed to compound extreme events (heat waves, drought, atmospheric-river flooding, wildfire smoke, freeze)—with strong existing ties to Research and Extension Centers (RECs); and (iv) UCM’s research mission is explicitly oriented toward the underserved San Joaquin Valley and adjacent rural and Tribal communities that this position is intended to serve.

**Position Overview:** The position will focus on applied agricultural climatology, extreme-weather analysis and translation, climate adaptation strategies, and climate-impact communication, with explicit emphasis on connecting campus-based climate science to actionable guidance for agricultural producers, working-lands managers, rural communities, Tribal partners, and state agencies, as well as facilitating socio-hydrological transitions in perennial and specialty crop systems. With a focus on capacity-building for technical assistance providers, extension activities will include translating complex hydrologic and climate models into accessible decision-support tools used in participatory frameworks, and supporting the co-production of knowledge with local CE advisors, diverse communities, interest groups, and resource managers to accelerate the adoption of climate resilient practices. This position will ensure that UC remains a leading and trusted source of data-driven information in climate resilience. **Educational and Professional Background:** A Ph.D. in agroecology, geography, environmental science, agricultural climatology, hydrology, agricultural or environmental engineering, or a closely related discipline is required at the time of appointment. A demonstrated publication record, demonstrated experience with weather/climate datasets, forecast and projection products, and decision-support-tool development, and a record of (or strong interest in) stakeholder engagement, science communication, and collaboration with diverse stakeholders. Familiarity with California climate products, downscaled climate model output, remote sensing, and web-based decision-making platforms is highly desirable. **Reporting and Interactions:** The Specialist will be academically and administratively responsible to UC ANR, with departmental affiliation at UCM and support from the Valley Institute for Sustainability, Technology, & Agriculture (VISTA). The Specialist will engage closely with aforementioned Program Teams, UCCE advisors, statewide programs and RECs, ANR Policy Institute, and future ANR Disaster Institute. The Specialist will participate in UCM graduate education through graduate group membership in Environmental Systems, and will deliver occasional lectures, mentor students, and contribute to proposals and research projects with AES and CE colleagues across the system.

**Justification:** Climate change is altering the viability, productivity, and risk profile of California’s perennial and specialty crop systems, rangelands, and forests, through changes in heat exposure, winter chill accumulation, drought frequency, water availability, pest and disease dynamics, and extreme-event risk. A consequence of extreme weather is compounding hazards, where heat waves, atmospheric rivers and flooding, multi-year drought, wildfire and smoke, freeze events, high-wind episodes, and increasing whiplash events affect every Californian and every sector of the state’s economy. California’s distinctive regional geography produces an unusually heterogeneous extreme-weather envelope, and a maturing body of attribution science demonstrates that anthropogenic climate change is now shifting both the magnitude and the frequency

of these events outside the envelope on which existing agricultural, infrastructure, and management systems were designed. **Needs:** (1) A clear gap exists—within UC ANR and UCCE network—in connecting campus-based extreme-weather and climate research to extension delivery. (2) Existing decision-support resources (Climate Toolbox, Cal-Adapt, etc) require active maintenance, interpretation, and translation to serve growers, ranchers, foresters, water managers, Tribal communities, and rural emergency planners—work no current ANR academic is tasked with. (3) California rural communities and working landscapes remain under-represented in state and federal climate-policy processes, including the California Climate Change Assessments. This position operationalizes the 2025–2030 Strategic Plan commitment to equitably serve every California community by 2030 and directly supports the new UC ANR Policy Institute’s mandate for science-to-policy communication. Knowledge gaps the position will address: (i) operational translation of weather and seasonal-to-decadal climate information for working lands; (ii) attribution of meteorological conditions to crop, livestock, water-supply, fire, public-health, and economic outcomes; and (iii) co-developed decision-support tools that are trusted and usable by rural communities. **Outcomes and Impact:** This position directly advances UC ANR Strategic Vision 2040 priorities related to climate adaptation and resilience, sustainable food systems, sustainable natural ecosystems, water resilience, and healthy people and communities. Programmatic success will include a statewide, science-based decision-support and extension program that helps California producers, commodity groups, agencies, and rural communities anticipate and adapt to climate-driven agricultural transitions, including improved crop-suitability planning, heat-risk management, chill-risk assessment, water-adaptation strategies, and transition planning. This position will be instrumental in advancing UCCE science translation into actionable guidance that builds climate-resilient communities, sustainable food systems, natural-resource protection, economic prosperity, and equity in climate-information access. Advancing UC ANR leadership in climate resilience for California is paramount.

**Extension:** The Specialist will develop a statewide extension presence focused on translating climate, hydrological, and agroecological models into practical guidance for agricultural producers, commodity boards, technical assistance providers, agencies, and rural communities. Three integrated objectives are: (1) *Translation*—convert climate products (sub-seasonal-to-seasonal forecasts, downscaled climate projections, drought and fire-weather indices, and post-event analyses) into accessible, actionable guidance for diverse end-users across the rural–urban gradient; (2) *Access*—help maintain, improve, and expand existing decision-making platforms such as the Climate Toolbox; co-develop new sector-specific products (e.g., agricultural heat-risk dashboards, atmospheric-river impact summaries, working lands outlooks, frost-risk and chill-portion tools); and ensure these tools are evaluated for usability with the communities they are intended to serve; and (3) *Facilitation*—connect UC ANR (Environmental Stewards, Master Gardeners, 4-H), with UC expertise and initiatives, and across state and federal agencies, Tribal partners, and California stakeholders. Extension modalities will include in-person workshops and field days, virtual and hybrid trainings, regional briefings, ANR publications, peer-reviewed extension articles (e.g., *California Agriculture*), blogs and social media, op-eds, broadcast and print media, legislative briefings, and community-based co-production of tools.

**Research:** The Specialist will pursue an applied, transdisciplinary research program focused on climate adaptation, sector vulnerability, and landscape-scale transitions in agroecosystems. The applied research program will include: (1) characterization of California’s extreme-weather envelope across timescales—from short-fuse events and seasonal anomalies to multi-decadal change—with explicit attention to compound and cascading events (e.g., hot-drought, atmospheric-river-on-snow, drought–wildfire–smoke chains, hydroclimatic whiplash); (2) impact analyses linking meteorological conditions and climate projections to outcomes in agriculture, livestock, water supply, ecosystem services, and the rural economy; (3) translational access to downscaling, bias correction, and rigorous uncertainty communication for climate projections relevant to working lands and rural communities; (4) co-development and validation of decision-support tools—including Climate Toolbox enhancements—using participatory, co-production methods with growers, Tribal partners, and resource managers; and (5) evaluation of communication and adoption pathways, including approaches that build trust in climate information among historically underserved and Tribal communities. Emerging and anticipated 20-year drivers include the intensification of compound and cascading events, shifting land cover

regimes, hydroclimatic whiplash, increasing exposure-equity concerns, and the rapid evolution of operational AI/ML weather and climate products that will require expert translation. Multi/transdisciplinary collaboration with hydrologists, agronomists, climate scientists, ecologists, public-health researchers, economists, and social scientists is integral to the program. Publication outlets will include *Nature Sustainability*, *Nature Climate Change*, *Earth's Future*, and—for extension audiences—*California Agriculture* and ANR publications.

**UC ANR Network:** The position fills the highest-priority single gap identified by the UC ANR Climate Change Program Team: a dedicated extreme-weather translation and impacts academic with the explicit mandate to bridge campus research and extension. No current UCCE Specialist or Advisor holds this as a primary role. The position complements—and does not duplicate—UC ANR Fire Network (fire-specific), the Water PT (hydrology-specific), and crop-commodity Specialists, by providing the cross-cutting weather and climate science foundation that those programs already draw upon informally and ad hoc. Anticipated UC ANR collaborators include AES faculty at UCM (CEE, Management of Complex Systems (MCS), SNRI, VISTA), UC Davis (VetMed CE, Vit & Enol, LAWR), UC San Diego/Scripps, and UC Berkeley (ESPM), CIWR, RECs and UCCE Advisors. Existing programs to which the Specialist will contribute early include the USDA Secure Water Future, UC Disaster Resilience Network, the next California Climate Change Assessment chapter teams, and the USDA California Climate Hub. Acknowledged network gaps include: (i) no current ANR academic dedicated to operational/applied climatology; (ii) limited capacity to translate climate products for clientele; and (iii) underdeveloped connections between UC climate science and resource managers. **External Network:** The Specialist will collaborate with state and federal agencies, producer organizations, technical assistance providers, commodity boards, water agencies, and community partners. Additional collaboration is likely to include USGS Climate Adaptation Science Centers, the USDA California Climate Hub, CDFA, Western Center for Agriculture and Safety (WCAHS), DWR, SWRCB, OPR and SGC. Facilitated engagement with the California Tribal Climate Resilience Working Group, the California Farm Bureau Federation, commodity boards, county ag commissioners, and NGOs (e.g., PPIC, EDF, California Water Data Consortium, etc.) is expected. The Specialist will be expected to serve as a contributing author to state planning efforts, such as future California Climate Change Assessments.

**Primary Support:** Dedicated office space will be provided at UCM, with access to shared computational and cyberinfrastructure resources (high-performance computing, cloud allocations) appropriate for climate-data analysis. Dedicated wet-lab space is not required for this position, but analytical needs will be met through VISTA and CEE/MCS shared resources. Transportation can be provided through VISTA and UCM fleet services. Additional computational needs (e.g., software licenses, cloud/HPC access, web tools, data-storage support, and field instrumentation) will be provided by UCM VISTA and AES. **Research Costs:** Startup support through UC ANR commitments combined with UCM contributions; access to existing field-observation networks (e.g., Experimental Smart Farm, RECs) and ongoing project infrastructure including Secure Water Future program. Administrative support will be provided by VISTA. **Other Support:** The Specialist will be expected to develop a robust extramurally funded applied research and extension program. Likely sources include state (e.g., CalEPA, CalOES, CDFA, CEC, DOC, DWR, SGC) and federal (DOE, NOAA, NSF, USDA, USGS), and private foundations focused on climate resilience (e.g., Resources Legacy Fund, Packard Foundation, Walton Family Foundation, etc.). Additional funding sources are likely to include commodity boards, water agencies, and future California Climate Change Assessments.

**Qualifications:** Ph.D. in agroecology, geography, environmental engineering, agricultural climatology, or a closely related discipline. Demonstrated understanding of climate change impacts on perennial and specialty cropping systems, including thermal niche shifts, chill accumulation, and extreme heat events. Strong foundation in data analysis and modeling, including use of climate modeling tools to assess regional agricultural vulnerabilities and landscape-scale transitions. Exceptional written, oral, and interpersonal communication skills, including the ability to translate complex hydrosatial and climate models into accessible, actionable guidance. Demonstrated commitment to participatory research and collaboration with UCCE advisors, technical assistance providers, commodity boards, agricultural producers, and state or federal agencies.